

MODEL APPLICATION

Year	Model	Beginning Frame No.
2013	ZR800AD	JKBZR800AADA00001
2013	ZR800BD	JKBZR800B1□DDA00001 JKBZR800ABDA00001
2013	ZR800CD	JKBZR800CCDA00001
2013	ZR800DD	JKBZR800CDDA00001

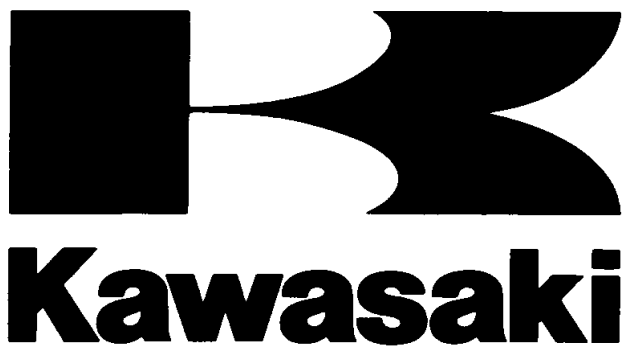
□:This digit in the frame number changes from one machine to another.



KAWASAKI HEAVY INDUSTRIES, LTD.
Motorcycle & Engine Company

Part No.99924-1463-01

Printed in Japan



Z800
Z800 ABS



Motorcycle Service Manual

Quick Reference Guide

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LIST OF ABBREVIATIONS

A	ampere(s)	in.	inch(s)
ABDC	after bottom dead center	km/h	kilometers per hour
ABS	antilock brake system	L	liter(s)
AC	alternating current	LCD	liquid crystal display
Ah	ampere hour	LED	light emitting diode
ATDC	after top dead center	lb	pound(s)
BBDC	before bottom dead center	m	meter(s)
BDC	bottom dead center	min	minute(s)
BTDC	before top dead center	mmHg	millimeters of mercury
°C	degree(s) Celsius	mph	miles per hour
cmHg	centimeters of mercury	N	newton(s)
cu in	cubic inch(s)	oz	ounce(s)
DC	direct current	Pa	pascal(s)
DFI	digital fuel injection	PS	horsepower
DOHC	double overhead camshaft	psi	pound(s) per square inch
DOT	department of transportation	qt	quart(s)
ECU	electronic control unit	r	revolution
F	farad(s)	rpm	revolution(s) per minute
°F	degree(s) Fahrenheit	s	second(s)
ft	foot, feet	TDC	top dead center
g	gram(s)	TIR	total indicator reading
gal	gallon(s)	V	volt(s)
h	hour(s)	W	watt(s)
HP	horsepower(s)	Ω	ohm(s)
IC	integrated circuit		

COUNTRY AND AREA CODES

AU	Australia	WVTA (FULL)	WVTA Model (Full Power)
BR	Brazil	UK WVTA (FULL)	WVTA Model (Left Side Traffic, Full Power)
SEA-B2	Southeast Asia B2	WVTA (78.2)	WVTA Model (78.2 kW Power)

Foreword

This manual is designed primarily for use by trained mechanics in a properly equipped shop. However, it contains enough detail and basic information to make it useful to the owner who desires to perform his own basic maintenance and repair work. A basic knowledge of mechanics, the proper use of tools, and workshop procedures must be understood in order to carry out maintenance and repair satisfactorily. Whenever the owner has insufficient experience or doubts his ability to do the work, all adjustments, maintenance, and repair should be carried out only by qualified mechanics.

In order to perform the work efficiently and to avoid costly mistakes, read the text, thoroughly familiarize yourself with the procedures before starting work, and then do the work carefully in a clean area. Whenever special tools or equipment are specified, do not use makeshift tools or equipment. Precision measurements can only be made if the proper instruments are used, and the use of substitute tools may adversely affect safe operation.

For the duration of the warranty period, we recommend that all repairs and scheduled maintenance be performed in accordance with this service manual. Any owner maintenance or repair procedure not performed in accordance with this manual may void the warranty.

To get the longest life out of your vehicle.

- Follow the Periodic Maintenance Chart in the Service Manual.
- Be alert for problems and non-scheduled maintenance.
- Use proper tools and genuine Kawasaki Motorcycle parts. Special tools, gauges, and testers that are necessary when servicing Kawasaki motorcycles are introduced by the Service Manual. Genuine parts provided as spare parts are listed in the Parts Catalog.
- Follow the procedures in this manual carefully. Don't take shortcuts.
- Remember to keep complete records of maintenance and repair with dates and any new parts installed.

How to Use This Manual

In this manual, the product is divided into its major systems and these systems make up the manual's chapters. The Quick Reference

Guide shows you all of the product's system and assists in locating their chapters. Each chapter in turn has its own comprehensive Table of Contents.

For example, if you want stick coil information, use the Quick Reference Guide to locate the Electrical System chapter. Then, use the Table of Contents on the first page of the chapter to find the Stick Coil section.

Whenever you see symbols, heed their instructions! Always follow safe operating and maintenance practices.

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

This manual contains four more symbols which will help you distinguish different types of information.

NOTE

○ *This note symbol indicates points of particular interest for more efficient and convenient operation.*

- Indicates a procedural step or work to be done.
- Indicates a procedural sub-step or how to do the work of the procedural step it follows. It also precedes the text of a NOTE.
- ★ Indicates a conditional step or what action to take based on the results of the test or inspection in the procedural step or sub-step it follows.

In most chapters an exploded view illustration of the system components follows the Table of Contents. In these illustrations you will find the instructions indicating which parts require specified tightening torque, oil, grease or a locking agent during assembly.

General Information

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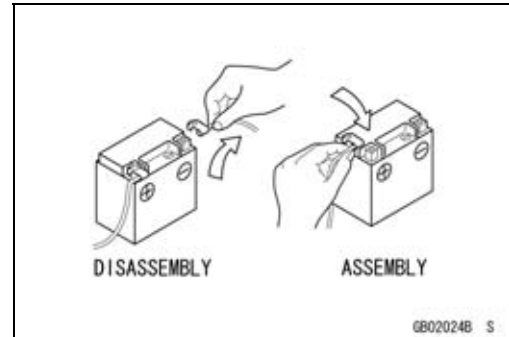
Before Servicing

Before starting to perform an inspection service or carry out a disassembly and reassembly operation on a motorcycle, read the precautions given below. To facilitate actual operations, notes, illustrations, photographs, cautions, and detailed descriptions have been included in each chapter wherever necessary. This section explains the items that require particular attention during the removal and reinstallation or disassembly and reassembly of general parts.

Especially note the following.

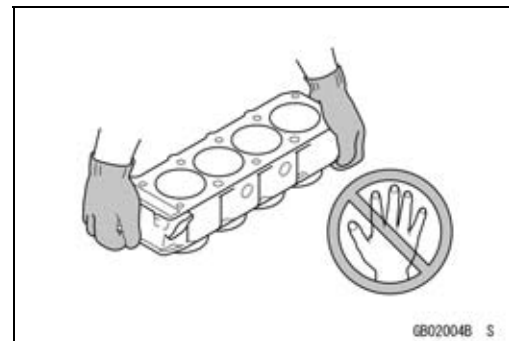
Battery Ground

Before completing any service on the motorcycle, disconnect the battery cables from the battery to prevent the engine from accidentally turning over. Disconnect the ground cable (-) first and then the positive (+). When completed with the service, first connect the positive (+) cable to the positive (+) terminal of the battery then the negative (-) cable to the negative terminal.



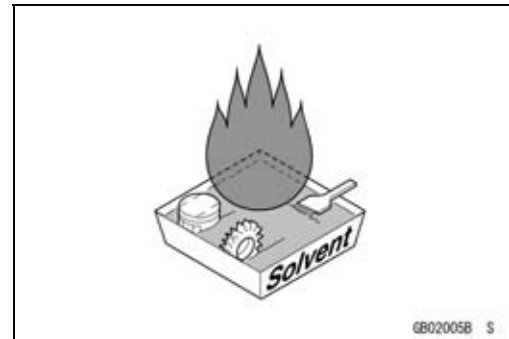
Edges of Parts

Lift large or heavy parts wearing gloves to prevent injury from possible sharp edges on the parts.



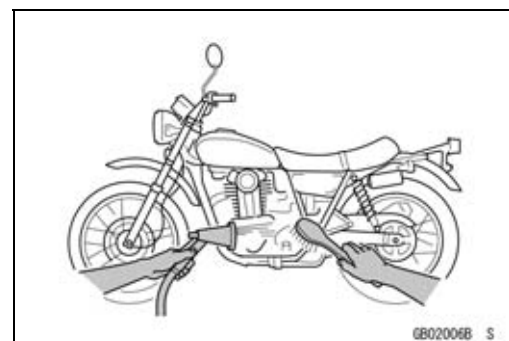
Solvent

Use a high flash-point solvent when cleaning parts. High flash-point solvent should be used according to directions of the solvent manufacturer.



Cleaning Vehicle before Disassembly

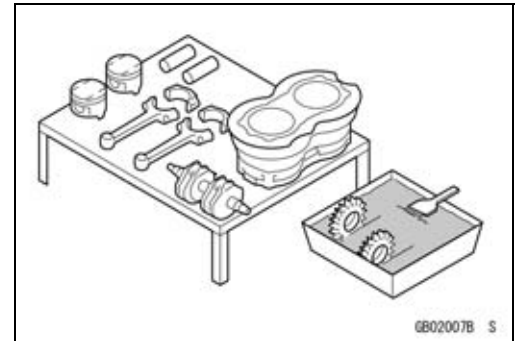
Clean the vehicle thoroughly before disassembly. Dirt or other foreign materials entering into sealed areas during vehicle disassembly can cause excessive wear and decrease performance of the vehicle.



Before Servicing

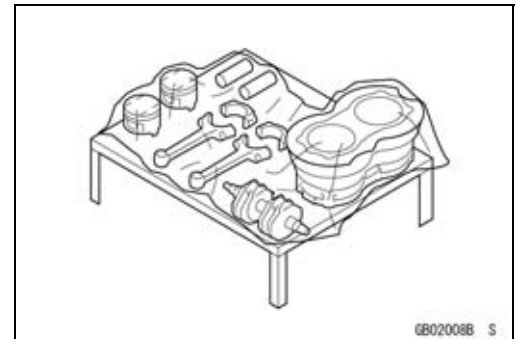
Arrangement and Cleaning of Removed Parts

Disassembled parts are easy to confuse. Arrange the parts according to the order the parts were disassembled and clean the parts in order prior to assembly.



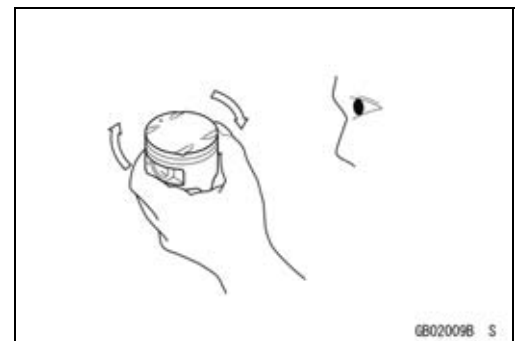
Storage of Removed Parts

After all the parts including subassembly parts have been cleaned, store the parts in a clean area. Put a clean cloth or plastic sheet over the parts to protect from any foreign materials that may collect before re-assembly.



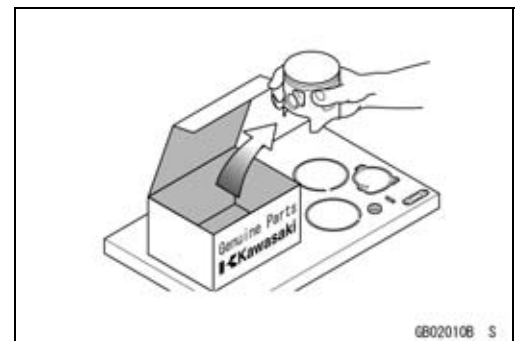
Inspection

Reuse of worn or damaged parts may lead to serious accident. Visually inspect removed parts for corrosion, discoloration, or other damage. Refer to the appropriate sections of this manual for service limits on individual parts. Replace the parts if any damage has been found or if the part is beyond its service limit.



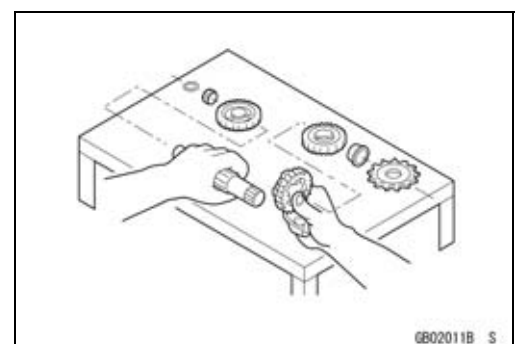
Replacement Parts

Replacement parts must be KAWASAKI genuine or recommended by KAWASAKI. Gaskets, O-rings, oil seals, grease seals, circlips, cotter pins or self-locking nuts must be replaced with new ones whenever disassembled.



Assembly Order

In most cases assembly order is the reverse of disassembly, however, if assembly order is provided in this Service Manual, follow the procedures given.

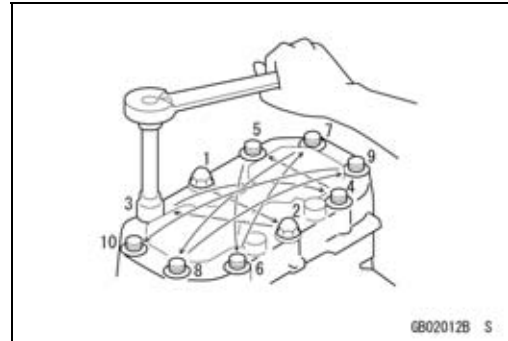


1-4 GENERAL INFORMATION

Before Servicing

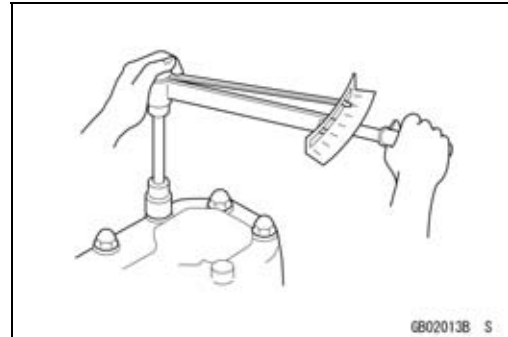
Tightening Sequence

Generally, when installing a part with several bolts, nuts, or screws, start them all in their holes and tighten them to a snug fit. Then tighten them according to the specified sequence to prevent case warpage or deformation which can lead to malfunction. Conversely when loosening the bolts, nuts, or screws, first loosen all of them by about a quarter turn and then remove them. If the specified tightening sequence is not indicated, tighten the fasteners alternating diagonally.



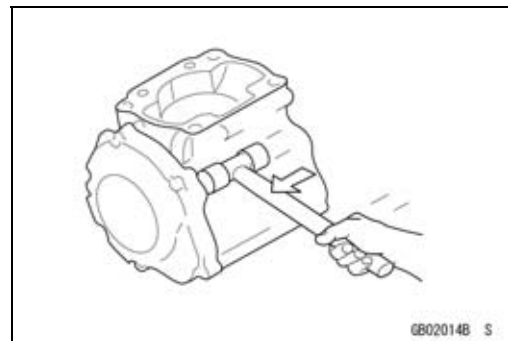
Tightening Torque

Incorrect torque applied to a bolt, nut, or screw may lead to serious damage. Tighten fasteners to the specified torque using a good quality torque wrench.



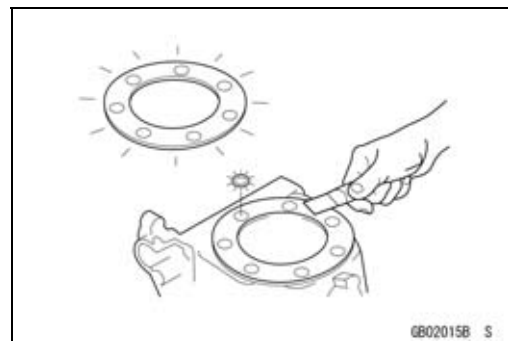
Force

Use common sense during disassembly and assembly, excessive force can cause expensive or hard to repair damage. When necessary, remove screws that have a non-permanent locking agent applied using an impact driver. Use a plastic-faced mallet whenever tapping is necessary.



Gasket, O-ring

Hardening, shrinkage, or damage of both gaskets and O-rings after disassembly can reduce sealing performance. Remove old gaskets and clean the sealing surfaces thoroughly so that no gasket material or other material remains. Install the new gaskets and replace the used O-rings when re-assembling.



Liquid Gasket, Non-permanent Locking Agent

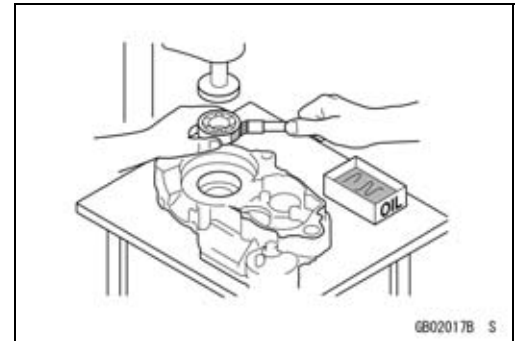
For applications that require Liquid Gasket or a Non-Permanent Locking Agent, clean the surfaces so that no oil residue remains before applying liquid gasket or non-permanent locking agent. Do not apply them excessively. Excessive application can clog oil passages and cause serious damage.



Before Servicing

Press

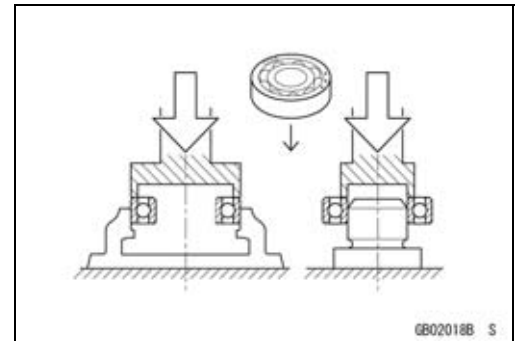
For items such as bearings or oil seals that must be pressed into place, apply small amount of oil to the contact area. Be sure to maintain proper alignment and use smooth movements when installing.



Ball Bearing and Needle Bearing

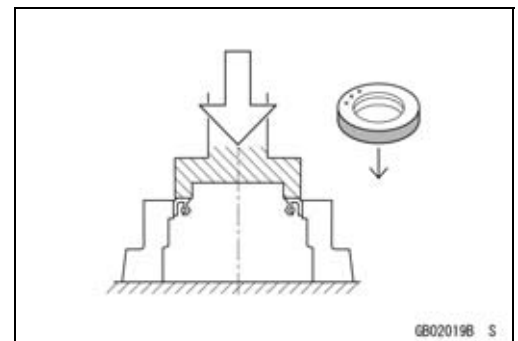
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

Pressing the incorrect race can cause pressure between the inner and outer race and result in bearing damage.

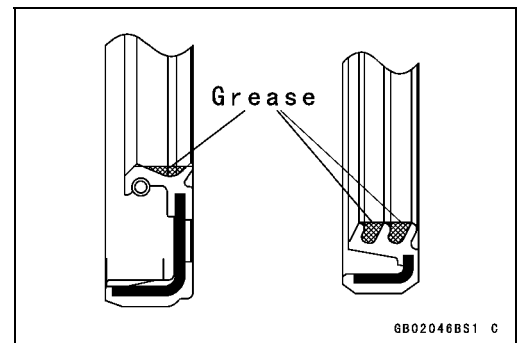


Oil Seal, Grease Seal

Do not remove pressed oil or grease seals unless removal is necessary. Replace with new ones whenever removed. Press new oil seals with manufacture and size marks facing out. Make sure the seal is aligned properly when installing.

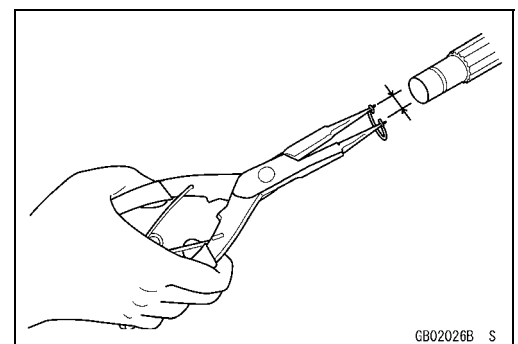


Apply specified grease to the lip of seal before installing the seal.



Circlips, Cotter Pins

Replace the circlips or cotter pins that were removed with new ones. Take care not to open the clip excessively when installing to prevent deformation.

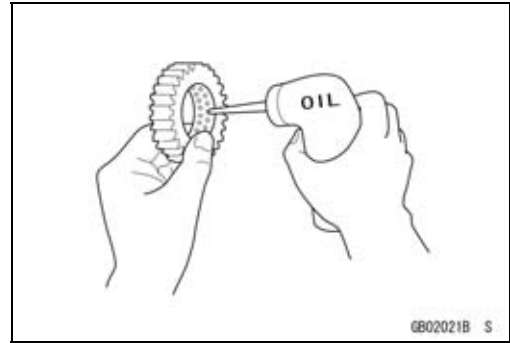


1-6 GENERAL INFORMATION

Before Servicing

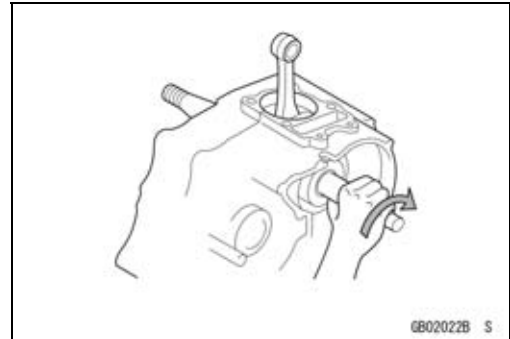
Lubrication

It is important to lubricate rotating or sliding parts during assembly to minimize wear during initial operation. Lubrication points are called out throughout this manual, apply the specific oil or grease as specified.



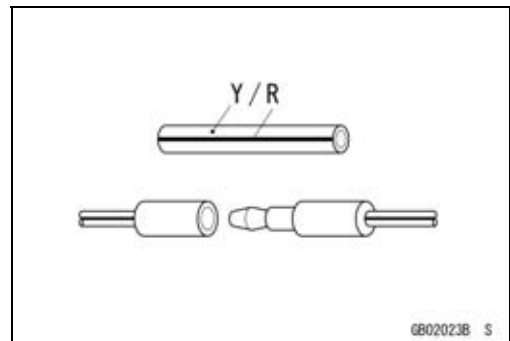
Direction of Engine Rotation

When rotating the crankshaft by hand, the free play amount of rotating direction will affect the adjustment. Rotate the crankshaft to positive direction (clockwise viewed from output side).



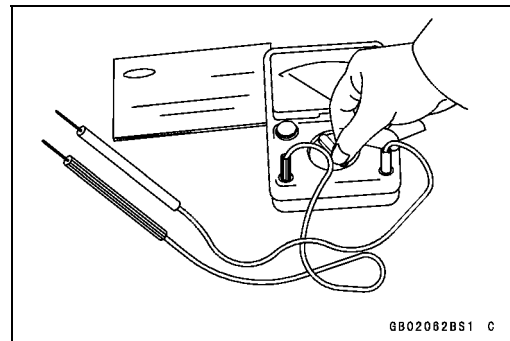
Electrical Wires

A two-color wire is identified first by the primary color and then the stripe color. Unless instructed otherwise, electrical wires must be connected to those of the same color.



Instrument

Use a meter that has enough accuracy for an accurate measurement. Read the manufacture's instructions thoroughly before using the meter. Incorrect values may lead to improper adjustments.



Model Identification

ZR800AD (Europe) Left Side View



ZR800AD (Europe) Right Side View



1-8 GENERAL INFORMATION

Model Identification

ZR800BD (Europe) Left Side View



ZR800BD (Europe) Right Side View



Model Identification

ZR800CD Left Side View



ZR800CD Right Side View



1-10 GENERAL INFORMATION

Model Identification

ZR800DD Left Side View



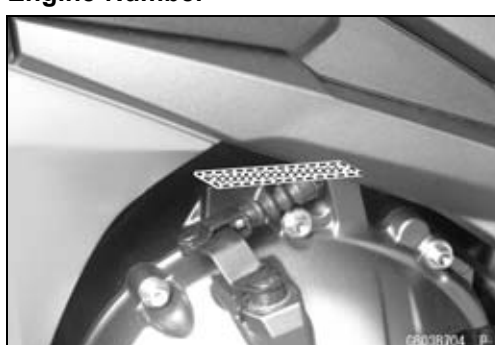
ZR800DD Right Side View



Frame Number



Engine Number



General Specifications

Items	ZR800AD/BD/CD/DD
Dimensions	
Overall Length	2 100 mm (82.68 in.)
Overall Width	800 mm (31.50 in.)
Overall Height	1 050 mm (41.34 in.)
Wheelbase	1 445 mm (56.89 in.)
Road Clearance	150 mm (5.91 in.)
Seat Height	834 mm (32.83 in.)
Curb Mass:	
ZR800A	229 kg (504.9 lb)
ZR800B	231 kg (509.4 lb)
ZR800C	226 kg (498.3 lb)
ZR800D	228 kg (502.7 lb)
Front:	
ZR800A	116 kg (255.8 lb)
ZR800B	117 kg (258.0 lb)
ZR800C	114 kg (251.4 lb)
ZR800D	115 kg (253.6 lb)
Rear:	
ZR800A	113 kg (249.2 lb)
ZR800B	114 kg (251.4 lb)
ZR800C	112 kg (247.0 lb)
ZR800D	113 kg (249.2 lb)
Fuel Tank Capacity	17 L (4.5 US gal.)
Performance	
Minimum Turning Radius	3.0 m (9.8 ft)
Engine	
Type	4-stroke, DOHC, 4-cylinder
Cooling System	Liquid-cooled
Bore and Stroke	71.0 × 50.9 mm (2.80 × 2.00 in.)
Displacement	806 cm ³ (49.18 cu in.)
Compression Ratio	11.9 : 1
Maximum Horsepower:	
ZR800A/B	83.0 kW (113 PS) at 10 200 r/min (rpm) WVTA (78.2) 78.2 kW (106 PS) at 10 000 r/min (rpm)
ZR800C/D	70.0 kW (95.2 PS) at 9 500 r/min (rpm)
Maximum Torque:	
ZR800A/B	83.0 N·m (8.5 kgf·m, 61 ft·lb) at 8 000 r/min (rpm) WVTA (78.2) 80.5 N·m (8.2 kgf·m, 59 ft·lb) at 8 000 r/min (rpm)
ZR800C/D	76.0 N·m (7.7 kgf·m, 56 ft·lb) at 8 000 r/min (rpm)
Fuel System	FI (Fuel Injection) MIKUNI 34 EHDW × 4
Starting System	Electric starter
Ignition System	Battery and coil (transistorized)
Timing Advance	Electronically advanced (digital igniter)
Ignition Timing	From 10° BTDC at 1 100 r/min (rpm) to 37° BTDC at 5 000 r/min (rpm)

1-12 GENERAL INFORMATION

General Specifications

Items	ZR800AD/BD/CD/DD
Spark Plug Cylinder Numbering Method Firing Order Valve Timing: Intake: Open Close Duration Exhaust: Open Close Duration Lubrication System Engine Oil: Type Viscosity Capacity	NGK CR9EK, ND U27ETR Left to right, 1-2-3-4 1-2-4-3 38° BTDC 66° ABDC 284° 51° BBDC 25° ATDC 256° Forced lubrication (wet sump) API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2 SAE 10W-40 3.8 L (4.0 US qt)
Drive Train Primary Reduction System: Type Reduction Ratio Clutch Type Transmission: Type Gear Ratios: 1st 2nd 3rd 4th 5th 6th Final Drive System: Type Reduction Ratio Overall Drive Ratio	Gear 1.714 (84/49) Wet multi disc 6-speed, constant mesh, return shift 2.571 (36/14) 1.941 (33/17) 1.556 (28/18) 1.333 (28/21) 1.200 (24/20) 1.095 (23/21) Chain drive 3.000 (45/15) 5.633 at Top gear
Frame Type Caster (Rake Angle) Trail Front Tire: Type Size Rim Size	Tubular, diamond 24° 98 mm (3.86 in.) Tubeless 120/70ZR17 M/C (58W) J17M/C × MT3.50

General Specifications

Items	ZR800AD/BD/CD/DD
Rear Tire: Type Size Rim Size Front Suspension: Type Wheel Travel Rear Suspension: Type Wheel Travel Brake Type: Front Rear	Tubeless 180/55ZR17 M/C (73W) J17M/C × MT5.50 Telescopic fork 120 mm (4.72 in.) Swingarm (uni-trak) 137 mm (5.39 in.) Dual discs Single disc
Electrical Equipment Battery Headlight: Type Bulb: High Beam Low Beam Tail/Brake Light Alternator: Type Rated Output	12 V 8 Ah Semi-sealed beam 12 V 55 W × 2 12 V 55 W LED Three-phase AC 30.1 A/14.0 V at 5 000 r/min (rpm)

Specifications are subject to change without notice, and may not apply to every country.

1-14 GENERAL INFORMATION

Unit Conversion Table

Prefixes for Units:

Prefix	Symbol	Power
mega	M	× 1 000 000
kilo	k	× 1 000
centi	c	× 0.01
milli	m	× 0.001
micro	μ	× 0.000001

Units of Mass:

kg	×	2.205	=	lb
g	×	0.03527	=	oz

Units of Volume:

L	×	0.2642	=	gal (US)
L	×	0.2200	=	gal (IMP)
L	×	1.057	=	qt (US)
L	×	0.8799	=	qt (IMP)
L	×	2.113	=	pint (US)
L	×	1.816	=	pint (IMP)
mL	×	0.03381	=	oz (US)
mL	×	0.02816	=	oz (IMP)
mL	×	0.06102	=	cu in.

Units of Force:

N	×	0.1020	=	kg
N	×	0.2248	=	lb
kg	×	9.807	=	N
kg	×	2.205	=	lb

Units of Length:

km	×	0.6214	=	mile
m	×	3.281	=	ft
mm	×	0.03937	=	in.

Units of Torque:

N·m	×	0.1020	=	kgf·m
N·m	×	0.7376	=	ft·lb
N·m	×	8.851	=	in·lb
kgf·m	×	9.807	=	N·m
kgf·m	×	7.233	=	ft·lb
kgf·m	×	86.80	=	in·lb

Units of Pressure:

kPa	×	0.01020	=	kgf/cm ²
kPa	×	0.1450	=	psi
kPa	×	0.7501	=	cmHg
kgf/cm ²	×	98.07	=	kPa
kgf/cm ²	×	14.22	=	psi
cmHg	×	1.333	=	kPa

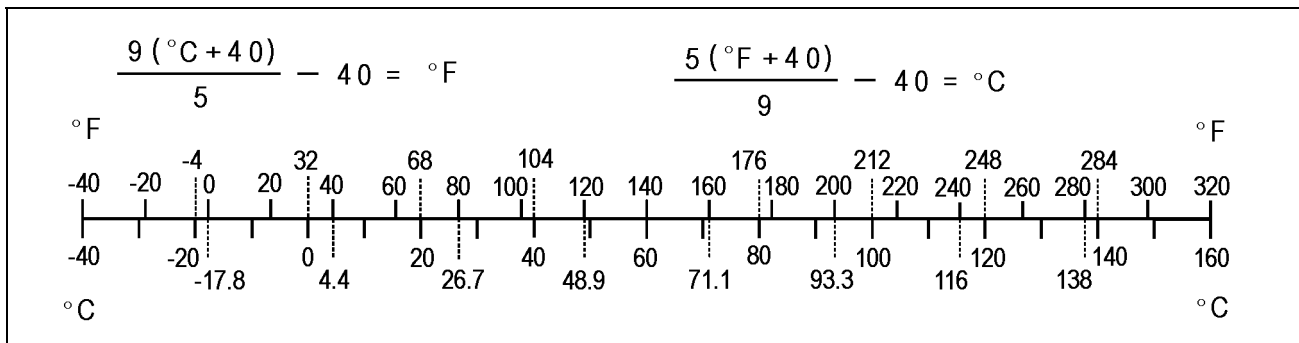
Units of Speed:

km/h	×	0.6214	=	mph
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Units of Power:

kW	×	1.360	=	PS
kW	×	1.341	=	HP
PS	×	0.7355	=	kW
PS	×	0.9863	=	HP

Units of Temperature:



Periodic Maintenance

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Periodic Maintenance Chart

The scheduled maintenance must be done in accordance with this chart to keep the motorcycle in good running condition. **The initial maintenance is vitally important and must not be neglected.**

Periodic Inspection

*A: Service at number of years shown or indicated odometer reading intervals, whichever comes first.

*B: For higher odometer readings, repeat at the frequency interval established here.

*C: Service more frequently when operating in severe conditions: dusty, wet, muddy, high speed, or frequent starting/stopping.

○: Emission Related Item

Q: Inspection

🔧: Change or Replace

🛢️: Lubrication

Items	year (*A)	Odometer Reading (*B) × 1 000 km (× 1 000 mile)					See Page
		1 (0.6)	6 (3.8)	12 (7.6)	18 (11.4)	24 (15.2)	
Fuel System							
○ Air cleaner element (*C)					Q		2-14
		🔧: every 36 000 km (22 500 mile)					
○ Idle speed		Q		Q		Q	2-16
○ Throttle control system (play, smooth return, no drag)	Q:1	Q		Q		Q	2-16
○ Engine vacuum synchronization				Q		Q	2-17
Fuel system	Q:1	Q		Q		Q	2-20
Fuel hoses	🔧:5						2-22
Cooling System							
Coolant level		Q		Q		Q	2-25
Cooling system	Q:1	Q		Q		Q	2-25
Coolant, water hose and O-ring	🔧:3	🔧: every 36 000 km (22 500 mile)					2-25, 2-28
Engine Top End							
○ Valve clearance		Q: every 42 000 km (26 250 mile)					2-28
○ Air suction system				Q		Q	2-33
Clutch							
Clutch operation (play, engagement, disengagement)		Q		Q		Q	2-33
Engine Lubrication System							
Engine oil and oil filter (*C)	🔧:1	🔧		🔧		🔧	2-34, 2-35
Wheels and Tires							
Tire air pressure	Q:1			Q		Q	2-36
Wheels and tires	Q:1			Q		Q	2-36
Wheel bearing damage	Q:1			Q		Q	2-37

2-4 PERIODIC MAINTENANCE

Periodic Maintenance Chart

Items	year (*A)	Odometer Reading (*B) × 1 000 km (× 1 000 mile)					See Page
		1 (0.6)	6 (3.8)	12 (7.6)	18 (11.4)	24 (15.2)	
Final Drive							
Drive chain lubrication condition (*C)		Q: every 600 km (400 mile)					2-38
Drive chain slack (*C)		Q: every 1 000 km (600 mile)					2-38
Drive chain wear (*C)				Q		Q	2-40
Drive chain guide wear				Q		Q	2-41
Brakes							
Brake system	Q:1	Q	Q	Q	Q	Q	2-42
Brake fluid level	Q:0.5	Q	Q	Q	Q	Q	2-43
Brake fluid (front and rear)	↻:2					↻	2-44
Brake hose/rubber parts of brake master cylinder and caliper	↻:4	↻: every 48 000 km (30 000 mile)					2-46, 2-47, 2-48
Brake pad wear (*C)			Q	Q	Q	Q	2-52
Brake light switch operation		Q	Q	Q	Q	Q	2-52
Suspension							
Suspension system	Q:1			Q		Q	2-53
Steering							
Steering play	Q:1	Q		Q		Q	2-55
Steering stem bearings	↻:2					↻	2-56
Electrical System							
Electrical system	Q:1			Q		Q	2-57
○ Spark plugs				↻		↻	2-61
Others							
Chassis parts	↻:1			↻		↻	2-62
Condition of bolts, nuts and fasteners		Q		Q		Q	2-64

Torque and Locking Agent

The following tables list the tightening torque for the major fasteners requiring use of a non-permanent locking agent or silicone sealant etc.

Letters used in the “Remarks” column mean:

AD: Apply adhesive (see the text).

AL: Tighten the two clamp bolts alternately two times to ensure even tightening torque.

HG: Apply high-temperature grease.

L: Apply a non-permanent locking agent.

Lh: Left-hand Threads

LG: Apply liquid gasket.

MO: Apply molybdenum disulfide grease oil solution.

(mixture of the engine oil and molybdenum disulfide grease in a weight ratio 10 : 1)

R: Replacement Parts

S: Follow the specified tightening sequence.

Si: Apply silicone grease.

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Fuel System (DFI)				
Throttle Cable Plate Bolt	5.9	0.60	52 in·lb	
Throttle Body Cover Mounting Bolts	4.0	0.41	35 in·lb	
Delivery Pipe Assy Mounting Screws	3.5	0.36	31 in·lb	
Throttle Body Assy Holder Clamp Bolts	1.1	0.11	10 in·lb	
Air Cleaner Duct Screws	3.8	0.39	34 in·lb	
Air Duct Clamp Bolts	1.1	0.11	10 in·lb	
Air Cleaner Housing Tapping Screws	1.2	0.12	11 in·lb	
Air Cleaner Housing Mounting Bolts	9.8	1.0	87 in·lb	
Vehicle-down Sensor Bolts	5.9	0.60	52 in·lb	
Water Temperature Sensor	12	1.2	106 in·lb	
Oxygen Sensor	44	4.5	32	
Speed Sensor Bolt	12	1.2	106 in·lb	
Crankshaft Sensor Bolts	5.9	0.60	52 in·lb	
Fuel Pump Bolts	9.8	1.0	87 in·lb	L, S
Fuel Level Sensor Bolts	6.9	0.70	61 in·lb	L
Exhaust Butterfly Valve Actuator Mounting Bolts	6.9	0.70	61 in·lb	
Exhaust Butterfly Valve Actuator Pulley Bolt	4.9	0.50	43 in·lb	
Cooling System				
Thermostat Bracket Bolt	6.9	0.70	61 in·lb	
Reserve Tank Bolts	9.8	1.0	87 in·lb	
Thermostat Housing Screws	2.6	0.27	23 in·lb	
Thermostat Housing Clamp Bolt	6.9	0.70	61 in·lb	
Water Temperature Sensor	12	1.2	106 in·lb	
Radiator Bolts	6.9	0.70	61 in·lb	
Water Hose Clamp Screws	3.0	0.31	27 in·lb	
Radiator Bracket Mounting Bolt	6.9	0.70	61 in·lb	
Coolant Drain Bolt (Cylinder)	9.8	1.0	87 in·lb	
Water Pipe Bolts	11	1.1	97 in·lb	L
Cylinder Fitting Mounting Bolts	11	1.1	97 in·lb	

2-6 PERIODIC MAINTENANCE

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Water Pump Impeller Bolt	9.8	1.0	87 in·lb	
Water Pump Cover Bolts	11	1.1	97 in·lb	
Coolant Drain Bolt (Water Pump)	11	1.1	97 in·lb	
Engine Top End				
Air Suction Valve Cover Bolts	9.8	1.0	87 in·lb	
Cylinder Head Cover Bolts	9.8	1.0	87 in·lb	S
Camshaft Cap Bolts (L = 45 mm)	12	1.2	106 in·lb	S
Camshaft Cap Bolts (L = 40 mm)	12	1.2	106 in·lb	S
Spark Plugs	13	1.3	115 in·lb	
Front Camshaft Chain Guide Bolt (Upper)	25	2.5	18	
Cylinder Head Bolts (M10)	See the text	←	←	MO, S
Cylinder Head Jacket Plugs	21.6	2.20	15.9	L
Cylinder Head Bolts (M6)	12	1.2	106 in·lb	S
Camshaft Chain Tensioner Mounting Bolts	11	1.1	97 in·lb	
Front Camshaft Chain Guide Bolt (Lower)	12	1.2	106 in·lb	
Rear Camshaft Chain Guide Bolt	25	2.5	18	
Camshaft Chain Tensioner Cap Bolt	20	2.0	15	
Throttle Body Assy Holder Bolts	13	1.3	115 in·lb	
Throttle Body Assy Holder Clamp Bolts	1.1	0.11	10 in·lb	
Coolant Drain Bolt (Cylinder)	9.8	1.0	87 in·lb	
Exhaust Butterfly Valve Actuator Mounting Bolts	6.9	0.70	61 in·lb	
Exhaust Butterfly Valve Actuator Pulley Bolt	4.9	0.50	43 in·lb	
Exhaust Butterfly Valve Cable Adjuster Locknuts	6.9	0.70	61 in·lb	
Exhaust Butterfly Valve Cover Bolt	11	1.1	97 in·lb	
Muffler Body Mounting Bolts	34	3.5	25	
Muffler Body End Cover Bolts	11	1.1	97 in·lb	
Muffler Body Cover Bolts	6.9	0.70	61 in·lb	
Exhaust Pipe Manifold Holder Nuts	17	1.7	13	S
Muffler Body Clamp Bolt	17	1.7	13	
Clutch				
Clutch Lever Clamp Bolts	11	1.1	97 in·lb	S
Oil Filler Plug	2.0	0.20	18 in·lb	
Clutch Cover Mounting Bolts	11	1.1	97 in·lb	
Clutch Spring Bolts	8.8	0.90	78 in·lb	
Clutch Hub Nut	135	13.8	100	R
Engine Lubrication System				
Oil Jet Nozzle Bolts	6.9	0.70	61 in·lb	L
Oil Filler Plug	2.0	0.20	18 in·lb	
Oil Filter	17	1.7	13	
Oil Filter Holder	78	8.0	58	L
Oil Pressure Switch Terminal Bolt	2.0	0.20	18 in·lb	HG
Oil Pressure Switch	15	1.5	11	LG

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Oil Passage Plugs	20	2.0	15	L
Oil Pipe Holder Bolts	13	1.3	115 in·lb	L
Water Pump Cover Bolts	11	1.1	97 in·lb	
Coolant Drain Bolt (Water Pump)	11	1.1	97 in·lb	
Water Pump Impeller Bolt	9.8	1.0	87 in·lb	
Oil Pressure Relief Valve	15	1.5	11	L
Oil Pan Bolts	15	1.5	11	
Engine Oil Drain Bolt	30	3.1	22	
Engine Removal/Installation				
Front Engine Bracket Bolts	11	1.1	97 in·lb	
Upper Engine Bracket Bolts	44	4.5	32	S
Subframe Bolts	25	2.5	18	S
Adjusting Collar Locknuts	49	5.0	36	S
Front Engine Mounting Bolts	44	4.5	32	S
Upper Adjusting Collar	9.8	1.0	87 in·lb	S
Middle Engine Mounting Nut	44	4.5	32	S
Rear Engine Bracket Bolts	25	2.5	18	S
Lower Engine Mounting Nut	44	4.5	32	S
Lower Adjusting Collar	4.9	0.50	43 in·lb	S
Engine Ground Cable Terminal Bolt	9.8	1.0	87 in·lb	
Crankshaft/Transmission				
Oil Jet Nozzle Bolts	6.9	0.70	61 in·lb	L
Crankcase Bolts (M6)	12	1.2	106 in·lb	S
Crankcase Bolts (M7)	20	2.0	15	S
Side Breather Plate Bolts	5.9	0.60	52 in·lb	L
Connecting Rod Big End Nuts	See the text	←	←	MO
Upper Breather Plate Bolts	9.8	1.0	87 in·lb	L
Starter Motor Clutch Bolts	12	1.2	106 in·lb	L
Oil Passage Plugs	20	2.0	15	L
Oil Pipe Holder Bolts	13	1.3	115 in·lb	L
Crankcase Bolts (M8)	27	2.8	20	S
Crankcase Bolts (M9, L = 95 mm)	See the text	←	←	MO, S
Crankcase Bolts (M9, L = 81 mm)	See the text	←	←	MO, S
Shift Drum Bearing Holder Screw	5.9	0.60	52 in·lb	L
Shift Drum Bearing Holder Bolt	12	1.2	106 in·lb	L
Shift Drum Cam Holder Bolt	12	1.2	106 in·lb	L
Neutral Switch	15	1.5	11	
Shift Lever Bolt	6.9	0.70	61 in·lb	
Gear Positioning Lever Bolt	12	1.2	106 in·lb	
Shift Shaft Return Spring Pin	29	3.0	21	L
Tie-Rod Locknuts	6.9	0.70	61 in·lb	

2-8 PERIODIC MAINTENANCE

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Shift Pedal Mounting Bolt	25	2.5	18	
Wheels/Tires				
Front Axle Clamp Bolt	20	2.0	15	
Front Axle	108	11.0	79.7	
Rear Axle Nut	108	11.0	79.7	
Final Drive				
Engine Sprocket Cover Bolts	6.9	0.70	61 in·lb	
Engine Sprocket Nut	167	17.0	123	MO
Chain Adjuster Locknuts	16.5	1.68	12.2	
Rear Axle Nut	108	11.0	79.7	
Rear Sprocket Nuts	59	6.0	44	R
Brakes				
Brake Hose Banjo Bolts	25	2.5	18	
Front Master Cylinder Reservoir Cap Screws	1.5	0.15	13 in·lb	
Brake Lever Pivot Bolt	1.0	0.10	8.9 in·lb	Si
Brake Lever Pivot Bolt Locknut	5.9	0.60	52 in·lb	
Front Brake Light Switch Screw	1.2	0.12	11 in·lb	
Front Master Cylinder Clamp Bolts	11	1.1	97 in·lb	S
Front Brake Disc Mounting Bolts	27	2.8	20	L
Front Caliper Assembly Bolts	22	2.2	16	L
Front Caliper Mounting Bolts	25	2.5	18	
Front Brake Pad Pins	17.2	1.75	12.7	
Front Brake Pad Pin Plugs	2.5	0.25	22 in·lb	
Front Caliper Holder Pin Bolts	22	2.2	16	L, Si
Rear Master Cylinder Mounting Bolts	25	2.5	18	
Brake Pedal Bolt	8.8	0.90	78 in·lb	
Rear Master Cylinder Push Rod Locknut	17.2	1.75	12.7	
Rear Caliper Pin Bolt	27	2.8	20	Si
Rear Brake Disc Mounting Bolts	27	2.8	20	L
Rear Brake Pad Pin	17.2	1.75	12.7	
Rear Brake Pad Pin Plug	2.5	0.25	22 in·lb	
Rear Caliper Mounting Bolt	22	2.2	16	
Brake Hose Banjo Bolts (ABS Hydraulic Unit)	33	3.4	24	
Bleed Valves	7.8	0.80	69 in·lb	
Suspension				
Upper Front Fork Clamp Bolts	20	2.0	15	
Front Fork Top Plugs	22.5	2.29	16.6	
Piston Rod Nuts	15	1.5	11	
Lower Front Fork Clamp Bolts	20.5	2.09	15.1	AL
Cylinder Units	70	7.1	52	AD
Front Axle Clamp Bolt	20	2.0	15	
Piston Rod Nut	15	1.5	11	
Piston Rod Rubber Nut	15	1.5	11	

PERIODIC MAINTENANCE 2-9

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Piston Rod Assy Stopper	17.5	1.78	12.9	AD
Cylinder Unit	70	7.1	52	AD
Swingarm Pivot Shaft Nut	108	11.0	79.7	
Swingarm Pivot Shaft	9.8	1.0	87 in·lb	
Swingarm Pivot Shaft Locknut	98	10	72	
Rear Shock Absorber Nut (Upper)	34	3.5	25	R
Rear Shock Absorber Nut (Lower)	34	3.5	25	R
Rocker Arm Nut	34	3.5	25	R
Tie-Rod Nuts	59	6.0	44	R
Steering				
Handlebar Holder Bolts	25	2.5	18	S
Rear View Mirror Locknut (Upper)	18	1.8	13	Lh
Rear View Mirror Nut (Lower)	30	3.1	22	
Switch Housing Screws	3.5	0.36	31 in·lb	
Upper Front Fork Clamp Bolts	20	2.0	15	
Steering Stem Head Bolt	108	11.0	79.7	
Lower Handlebar Holder Nuts	34	3.5	25	R
Steering Stem Nut	27	2.8	20	
Lower Front Fork Clamp Bolts	20.5	2.09	15.1	AL
Frame				
Rear View Mirror Locknut (Upper)	18	1.8	13	Lh
Rear View Mirror Nut (Lower)	30	3.1	22	
Turn Signal Light Mounting Screws	1.2	0.12	11 in·lb	
Front Fender Bolts	3.9	0.40	35 in·lb	
Footpeg Bracket Bolts	30	3.1	22	
Side Stand Switch Bolt	8.8	0.90	78 in·lb	L
Side Stand Bolt	29	3.0	21	
Side Stand Nut	44	4.5	32	R
Lower Fairing Mounting Bolts	9.8	1.0	87 in·lb	
Lower Fairing Bracket Bolts	9.8	1.0	87 in·lb	
License Plate Light Mounting Screws	1.2	0.12	11 in·lb	
Turn Signal Light Mounting Screws	1.2	0.12	11 in·lb	
Electrical System				
Turn Signal Light Mounting Screws	1.2	0.12	11 in·lb	
Meter Mounting Screws	1.2	0.12	11 in·lb	
Meter Assembly Screws	0.43	0.044	3.8 in·lb	
Front Brake Light Switch Screw	1.2	0.12	11 in·lb	
License Plate Light Mounting Screws	1.2	0.12	11 in·lb	
Oxygen Sensor	44	4.5	32	
Water Temperature Sensor	12	1.2	106 in·lb	
Stator Coil Bolts	12	1.2	106 in·lb	L
Alternator Rotor Bolt	155	15.8	114	
Starter Motor Clutch Bolts	12	1.2	106 in·lb	L

2-10 PERIODIC MAINTENANCE

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Timing Rotor Bolt	39	4.0	29	
Starter Motor Mounting Bolts	11	1.1	97 in·lb	
Crankshaft Sensor Cover Bolts	11	1.1	97 in·lb	
Crankshaft Sensor Bolts	5.9	0.60	52 in·lb	
Oil Pressure Switch Terminal Bolt	2.0	0.20	18 in·lb	HG
Oil Pressure Switch	15	1.5	11	LG
Alternator Lead Holding Plate Bolt	12	1.2	106 in·lb	L
Alternator Cover Bolts	15	1.5	11	
Left Lower Fairing Bracket Bolts	11	1.1	97 in·lb	
Starter Relay Cable Terminal Bolts	3.9	0.40	35 in·lb	
Starter Motor Cable Terminal Nut	4.9	0.50	43 in·lb	
Starter Relay Bracket Bolts	6.9	0.70	61 in·lb	
Side Stand Switch Bolt	8.8	0.90	78 in·lb	L
Regulator/Rectifier Bracket Bolts	6.9	0.70	61 in·lb	
Regulator/Rectifier Bolts	6.9	0.70	61 in·lb	
Spark Plugs	13	1.3	115 in·lb	
Speed Sensor Bolt	12	1.2	106 in·lb	
Engine Ground Cable Terminal Bolt	9.8	1.0	87 in·lb	
Fuel Level Sensor Bolts	6.9	0.70	61 in·lb	L
Neutral Switch	15	1.5	11	

The table below, relating tightening torque to thread diameter, lists the basic torque for the bolts and nuts. Use this table for only the bolts and nuts which do not require a specific torque value. All of the values are for use with dry solvent-cleaned threads.

Basic Torque for General Fasteners

Threads Diameter (mm)	Torque		
	N·m	kgf·m	ft·lb
5	3.4 ~ 4.9	0.35 ~ 0.50	30 ~ 43 in·lb
6	5.9 ~ 7.8	0.60 ~ 0.80	52 ~ 69 in·lb
8	14 ~ 19	1.4 ~ 1.9	10.0 ~ 13.5
10	25 ~ 34	2.6 ~ 3.5	19.0 ~ 25
12	44 ~ 61	4.5 ~ 6.2	33 ~ 45
14	73 ~ 98	7.4 ~ 10.0	54 ~ 72
16	115 ~ 155	11.5 ~ 16.0	83 ~ 115
18	165 ~ 225	17.0 ~ 23.0	125 ~ 165
20	225 ~ 325	23.0 ~ 33.0	165 ~ 240

Specifications

Item	Standard	Service Limit
Fuel System (DFI)		
Throttle Grip Free Play	2 ~ 3 mm (0.08 ~ 0.12 in.)	---
Idle Speed	1 100 ±50 r/min (rpm)	---
Bypass Screws (Turn Out)	---	---
Throttle Body Vacuum	35.3 ±1.3 kPa (265 ±10 mmHg) at idle speed	---
Air Cleaner Element	Paper filter	---
Cooling System		
Coolant:		
Type (Recommended)	Permanent type antifreeze	---
Color	Green	---
Mixed Ratio	Soft water 50%, Coolant 50%	---
Freezing Point	-35°C (-31°F)	---
Total Amount	2.8 L (3.0 US qt)	---
Engine Top End		
Valve Clearance:		
Exhaust	0.22 ~ 0.31 mm (0.0087 ~ 0.0122 in.)	---
Intake	0.15 ~ 0.24 mm (0.0059 ~ 0.0094 in.)	---
Clutch		
Clutch Lever Free Play	2 ~ 3 mm (0.08 ~ 0.12 in.)	---
Engine Lubrication System		
Engine Oil:		
Type	API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2	---
Viscosity	SAE 10W-40	---
Capacity	3.1 L (3.3 US qt) (when filter is not removed)	---
	3.4 L (3.6 US qt) (when filter is removed)	---
	3.8 L (4.0 US qt) (when engine is completely dry)	---
Level	Between upper and lower level lines (Wait 2 ~ 3 minutes after idling or running)	---
Wheels/Tires		
Tread Depth:		
Front	4.0 mm (0.16 in.)	1 mm (0.04 in.), (AT, CH, DE) 1.6 mm (0.06 in.)
Rear	5.5 mm (0.22 in.)	Up to 130 km/h (80 mph): 2 mm (0.08 in.), Over 130 km/h (80 mph): 3 mm (0.12 in.)

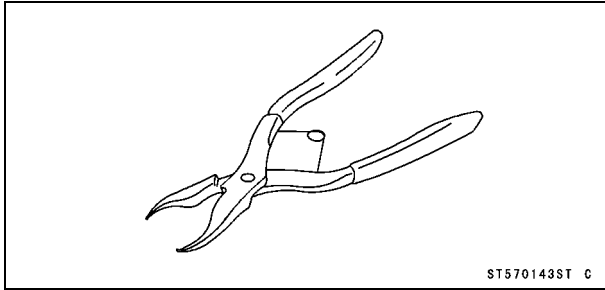
2-12 PERIODIC MAINTENANCE

Specifications

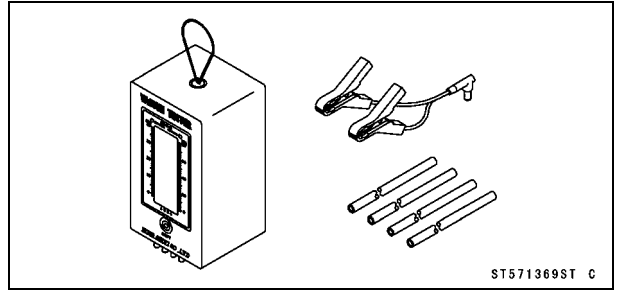
Item	Standard	Service Limit
Air Pressure (when Cold): Front	Up to 180 kg (397 lb) load: 250 kPa (2.50 kgf/cm ² , 36 psi)	— — —
Rear	Up to 180 kg (397 lb) load: 290 kPa (2.90 kgf/cm ² , 42 psi)	— — —
Final Drive		
Drive Chain Slack	20 ~ 30 mm (0.8 ~ 1.2 in.)	— — —
Drive Chain Wear (20-link Length)	317.5 ~ 318.2 mm (12.50 ~ 12.53 in.)	319 mm (12.6 in.)
Standard Chain:		
Make	ENUMA	— — —
Type	EK520MVXL2	— — —
Link	114 Links	— — —
Brakes		
Brake Fluid:		
Grade	DOT4	— — —
Brake Pad Lining Thickness:		
Front	4.0 mm (0.16 in.)	1 mm (0.04 in.)
Rear	5.0 mm (0.20 in.)	1.5 mm (0.06 in.)
Brake Light Timing:		
Front	Pulled ON	— — —
Rear	ON after about 10 mm (0.39 in.) of pedal travel	— — —
Electrical System		
Spark Plug:		
Type	NGK CR9EK or ND U27ETR	— — —
Gap	0.7 ~ 0.8 mm (0.028 ~ 0.031 in.)	— — —

Special Tools

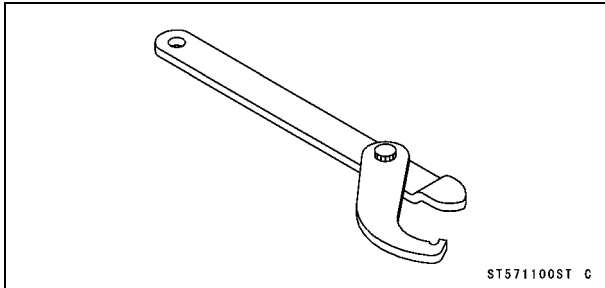
Inside Circlip Pliers:
57001-143



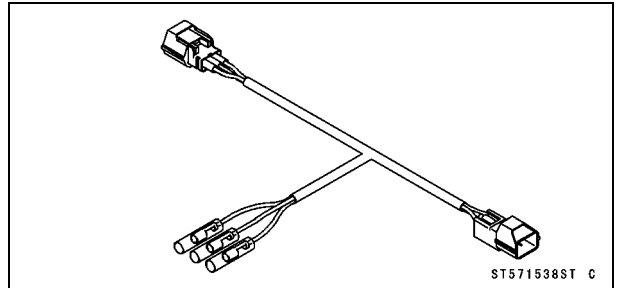
Vacuum Gauge:
57001-1369



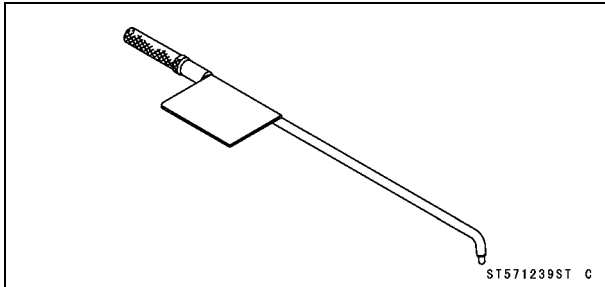
Steering Stem Nut Wrench:
57001-1100



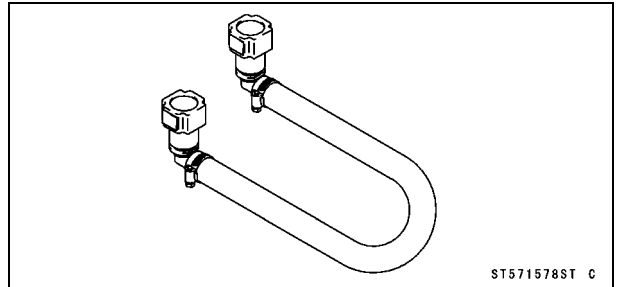
Throttle Sensor Setting Adapter:
57001-1538



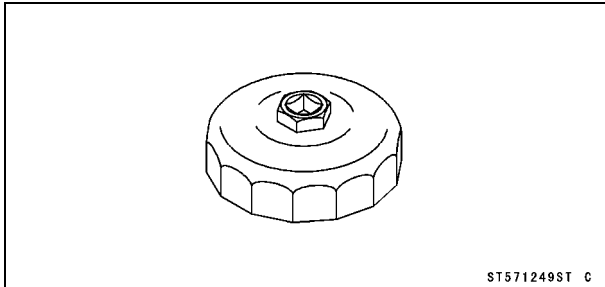
Pilot Screw Adjuster, A:
57001-1239



Extension Tube:
57001-1578



Oil Filter Wrench:
57001-1249



2-14 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Fuel System (DFI)

Air Cleaner Element Cleaning

NOTE

○In dusty areas, the element should be cleaned more frequently than the recommended interval.

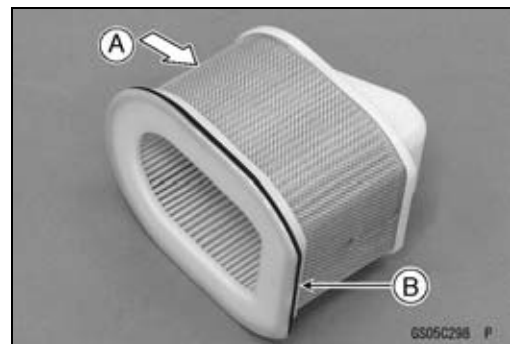
⚠ WARNING

If dirt or dust is allowed to pass through into the throttle assy, the throttle may become stuck, possibly causing accident. Replace the air cleaner element according to the maintenance chart.

NOTICE

If dirt gets through into the engine, excessive engine wear and possibly engine damage will occur.

- Remove the element (see Air Cleaner Element Replacement).
- Clean the element by tapping it lightly to loosen dust.
- Blow away the remaining dust by applying compressed air [A] from the outside to the inside (from the clean side to the dirty side).
- Visually inspect the element for no tears or no breaks and inspect the sponge gasket [B] also.
- ★ If the element or gasket has any tears or breaks, replace the element.



Air Cleaner Element Replacement

NOTE

○In dusty areas, the element should be replaced more frequently than the recommended interval.

⚠ WARNING

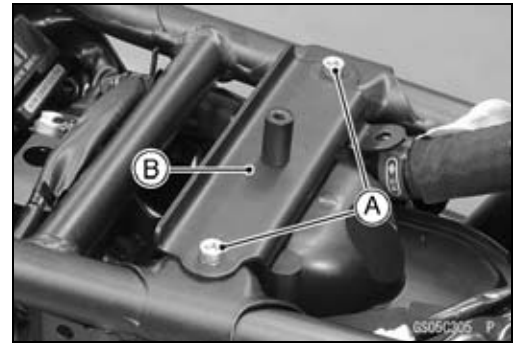
If dirt or dust is allowed to pass through into the throttle assy, the throttle may become stuck, possibly causing accident. Replace the air cleaner element according to the maintenance chart.

NOTICE

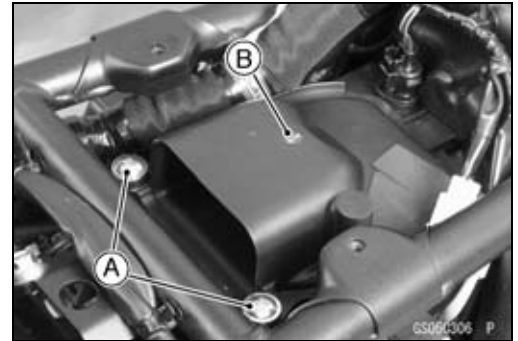
If dirt gets through into the engine, excessive engine wear and possibly engine damage will occur.

Periodic Maintenance Procedures

- Remove:
Fuel Tank (see Fuel Tank Removal in the Fuel System (DFI) chapter)
Bolts [A]
Fuel Tank Bracket [B]



- Remove the air cleaner duct screws [A].
- Remove the air cleaner duct [B] backward.



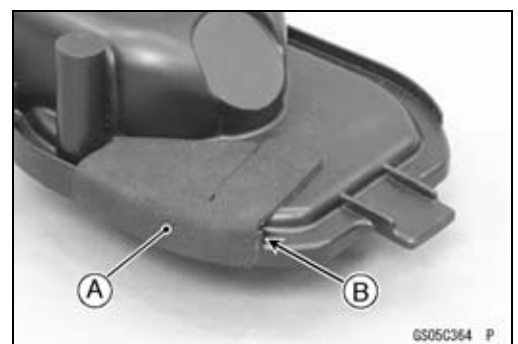
- Discard the air cleaner element [A].



- Install a new element [A] so that flat side [B] faces forward.



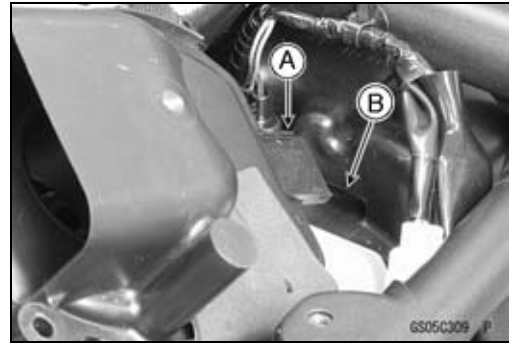
- ZR800A/B Models, when installing the pad [A], align the edge of the pad with the rib [B] of the air cleaner duct.



2-16 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

- Fit the tongue [A] of the air cleaner duct into the slot [B] of the air cleaner housing.
- Tighten:
Torque - Air Cleaner Duct Screws: 3.8 N·m (0.39 kgf·m, 34 in·lb)



Idle Speed Inspection

- Start the engine and warm it up thoroughly.
- With the engine idling, turn the handlebars to both sides [A].
- ★ If handlebars movement changes the idle speed, the throttle cables may be improperly adjusted or incorrectly routed or damaged. Be sure to correct any of these conditions before riding (see Throttle Control System Inspection and Cable, Wire, and Hose Routing section in the Appendix chapter).



⚠ WARNING

Operation with improperly adjusted, incorrectly routed or damaged cables could result in an unsafe riding condition. Follow the service manual to be make sure to correct any of these conditions.

- Check the idle speed.

Idle Speed

Standard: 1 100 ±50 r/min (rpm)

- ★ If the idle speed is out of the specified range, adjust it.

Idle Speed Adjustment

- Start the engine and warm it up thoroughly.
- Turn the adjusting screw [A] until the idle speed is correct.
- Open and close the throttle a few times to make sure that the idle speed is within the specified range. Readjust if necessary.

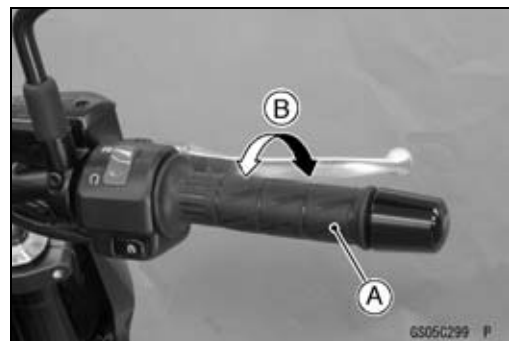


Throttle Control System Inspection

- Check that the throttle grip [A] moves smoothly from full open to close, and the throttle closes quickly and completely by the return spring in all steering positions.
- ★ If the throttle grip does not return properly, check the throttle cable routing, grip free play, and cable damage. Then lubricate the throttle cable.
- Check the throttle grip free play [B].

Throttle Grip Free Play

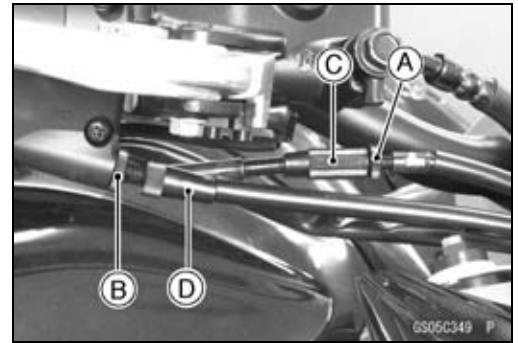
Standard: 2 ~ 3 mm (0.08 ~ 0.12 in.)



Periodic Maintenance Procedures

★ If the free play is incorrect, adjust the throttle cable as follows.

- Loosen the locknuts [A] [B].
 - Screw both throttle cable adjusters [C] [D] to give the throttle grip plenty of play.
 - Turn the decelerator cable adjuster [C] until there is no play when the throttle grip play completely closed.
 - Tighten the locknut [A].
 - Turn the accelerator cable adjuster [D] until 2 ~ 3 mm (0.08 ~ 0.12 in.) of throttle grip play is obtained.
 - Tighten the locknut [B].
- ★ If the free play can not be adjusted with the adjusters, replace the cable.

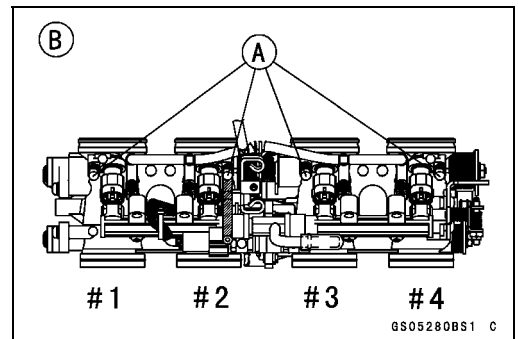
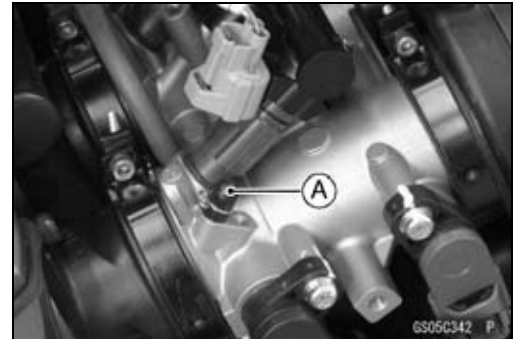


Engine Vacuum Synchronization Inspection

NOTE

○ These procedures are explained on the assumption that the intake and exhaust systems of the engine are in good condition.

- Situate the motorcycle so that it is vertical.
- Remove:
 - Fuel Tank (see Fuel Tank Removal in the Fuel System (DFI) chapter)
 - Fuel Outlet Hose (see Fuel Hose Replacement)
 - Intake Air Pressure Sensor #1 (see Intake Air Pressure Sensor #1 Removal in the Fuel System (DFI) chapter)
- Plug the vacuum hose end.
- Pull off the rubber caps [A] from the fittings of each throttle body.
 - Upside View [B]



- Disconnect the air switching valve hose [A] from the air cleaner housing.
- Plug the air switching valve hose end and air cleaner housing fitting.



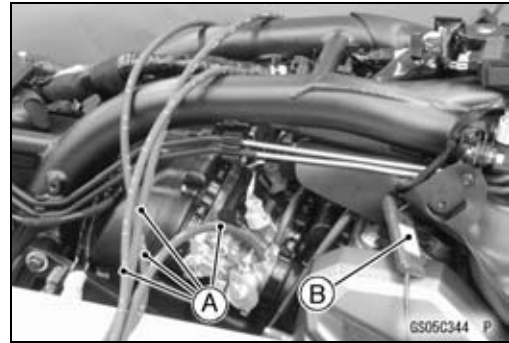
2-18 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

- Connect a vacuum gauge (special tool) and hoses [A] to the fittings on the throttle body.

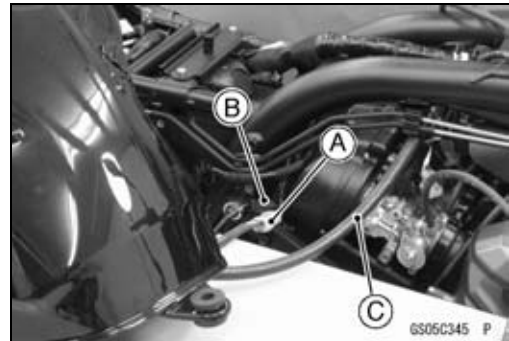
Special Tool - Vacuum Gauge: 57001-1369

- Connect a highly accurate tachometer [B] to one of the stick coil primary leads.



- Connect the following parts temporary.
 - Fuel Pump Lead Connector [A]
 - Fuel Level Sensor Lead Connector [B]
 - Extension Tube [C]

Special Tool - Extension Tube: 57001-1578



- Start the engine and warm it up thoroughly.
- Check the idle speed, using a highly accurate tachometer [A].

Idle Speed

Standard: 1 100 ±50 r/min (rpm)

- ★ If the idle speed is out of the specified range, adjust it with the adjusting screw (see Idle Speed Adjustment).

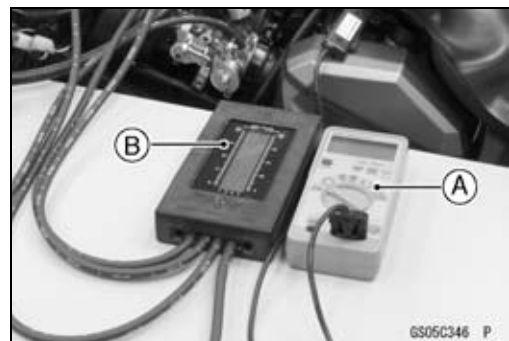
NOTICE

Do not measure the idle speed by the tachometer of the meter unit.

- While idling the engine, inspect the throttle body vacuum, using the vacuum gauge [B].

Throttle Body Vacuum

Standard: 35.3 ±1.3 kPa (265 ±10 mmHg) at idle speed



Periodic Maintenance Procedures

- ★ If any vacuum is not within specifications, adjust the bypass screws [A].
Upside View [B]

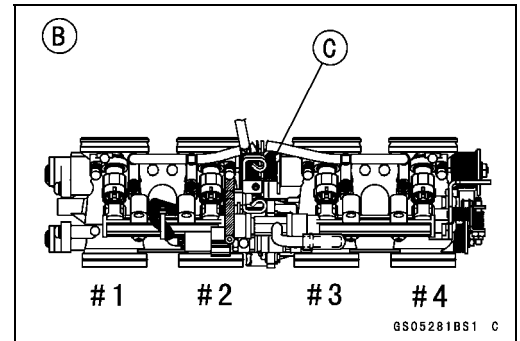
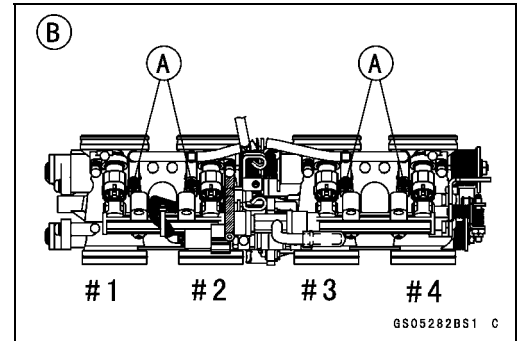
Special Tool - Pilot Screw Adjuster, A: 57001-1239

- Adjust the each vacuum (#1 ~ #4) to the standard value.
- Open and close the throttle valves after each measurement.

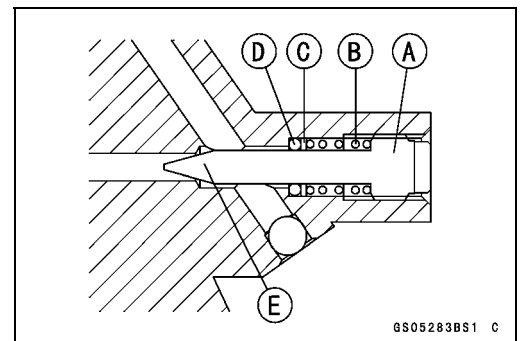
NOTE

○ Do not turn the center adjusting screw [C].

- Check the vacuums as before.
- ★ If all vacuums are within the specification range, finish the engine vacuum synchronization.
- ★ If any vacuum can not be adjusted within the specification, replace the bypass screws #1 ~ #4 with new ones, refer to the following procedure.



- Remove the throttle body assy (see Throttle Body Assy Removal in the Fuel System (DFI) chapter).
- Turn in the bypass screw [A] with counting the number of turns until it seals fully but not tightly. Record the number of turns.
- Remove:
 - Bypass Screw
 - Spring [B]
 - Washer [C]
 - O-ring [D]
- Check the bypass screw hole in the throttle body for carbon deposits.
- ★ If any carbons accumulate, wipe the carbons off from the hole, using a cotton pad penetrated with a high flash-point solvent.
- Replace the bypass screw, spring, washer and O-ring as a set.
- Turn in the bypass screw until it seats fully but not tightly.



NOTICE

Do not over-tighten the bypass screw. The tapered portion [E] of the bypass screw could be damaged.

2-20 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

- Back out the same number of turns counted when first turned in. This is to set the screw to its original position.

NOTE

○A throttle body has different “turns out” of the bypass screw for each individual unit. On setting the bypass screw, use the “turns out” determined during disassembly.

- Repeat the same procedure for other bypass screws.
- Repeat the synchronization.
- ★ If the vacuums are correct, check the output voltage of the main throttle sensor (see Main Throttle Sensor Output Voltage Inspection in the Fuel System (DFI) chapter).

Special Tool - Throttle Sensor Setting Adapter: 57001-1538

Main Throttle Sensor Output Voltage

Connections to Adapter:

Digital Meter (+) → R (sensor Y/W) lead

Digital Meter (-) → W (sensor G) lead

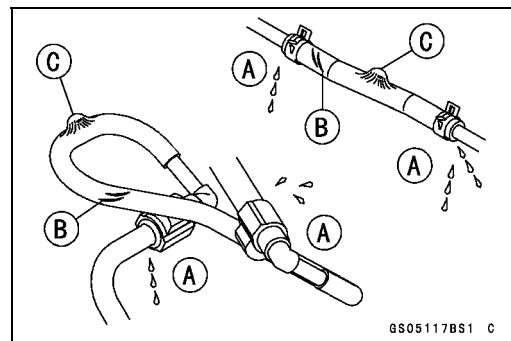
Standard: DC 0.995 ~ 1.025 V at idle throttle opening

- ★ If the output voltage is out of the standard, check the input voltage of the main throttle sensor (see Main Throttle Sensor Input Voltage Inspection in the Fuel System (DFI) chapter).
- Remove the vacuum gauge hoses and install the rubber caps on the original position.

Fuel System

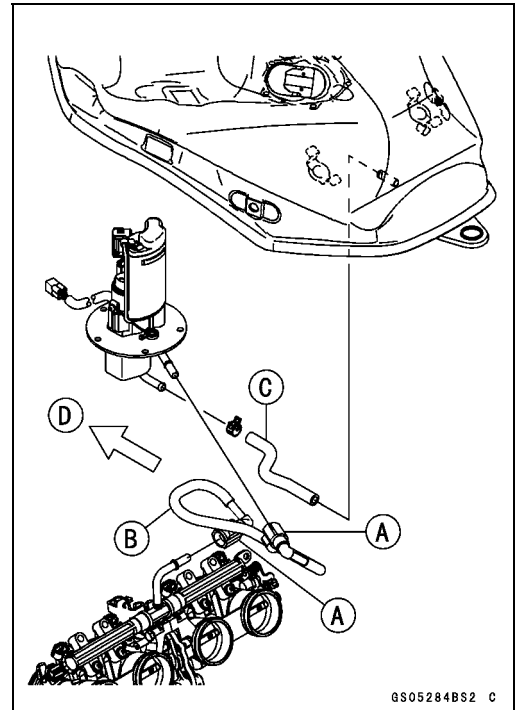
Fuel Hose Inspection (fuel leak, damage, installation condition)

- If the motorcycle is not properly handled, the high pressure inside the fuel line can cause fuel to leak [A] or the hose to burst. Remove the fuel tank (see Fuel Tank Removal in the Fuel System (DFI) chapter) and check the fuel hoses.
- ★ Replace the hose if any fraying, cracks [B] or bulges [C] are noticed.

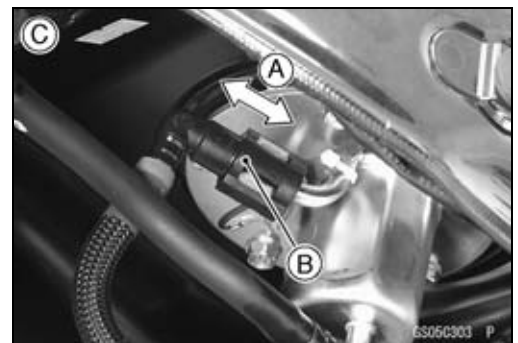


Periodic Maintenance Procedures

- Check that the hoses are routed according to Cable, Wire, and Hose Routing section in the Appendix chapter.
- ★ Replace the hose if it has been sharply bent or kinked.
- Hose Joints [A]
- Fuel Outlet Hose [B]
- Fuel Intake Hose [C]
- Front [D]



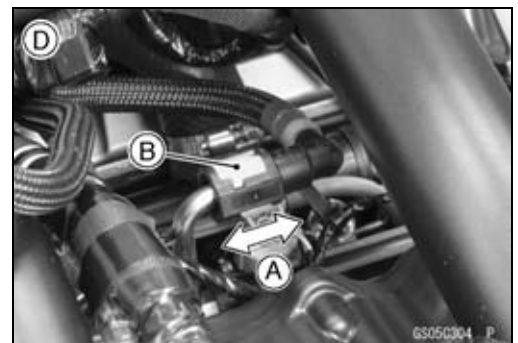
- Check that the outlet hose joints are securely connected.
- Push and pull [A] the hose joint [B] back and forth more than two times, and make sure it is locked and does not come off.
- Fuel Pump Side [C]
- Throttle Body Assy Side [D]



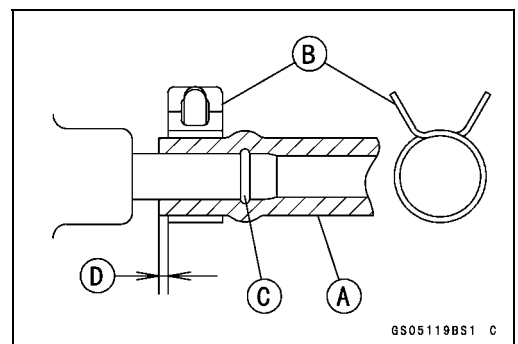
⚠ WARNING

Leaking fuel can cause a fire or explosion resulting in serious burns. Make sure the hose joint is installed correctly on the delivery pipe.

- ★ If it comes off, reinstall the hose joint.



- Check that the intake hose [A] is onto the pipe fully and the clamps [B] are installed beyond the raised rib [C].
- 1 ~ 2 mm (0.039 ~ 0.079 in.) [D]



2-22 PERIODIC MAINTENANCE

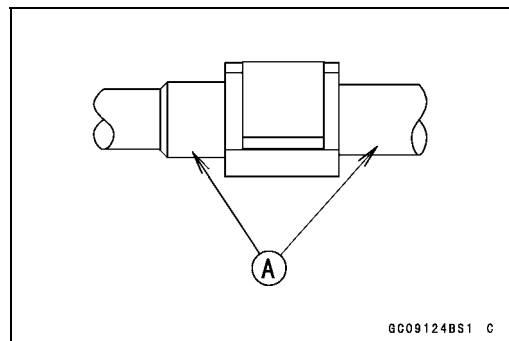
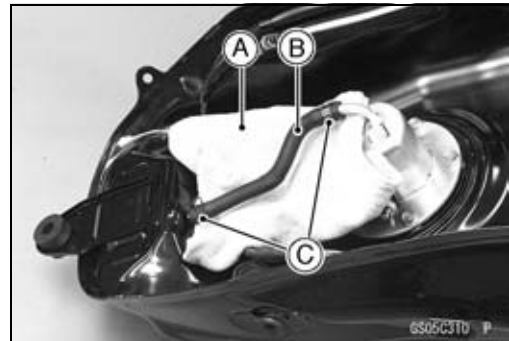
Periodic Maintenance Procedures

Fuel Hose Replacement

⚠ WARNING

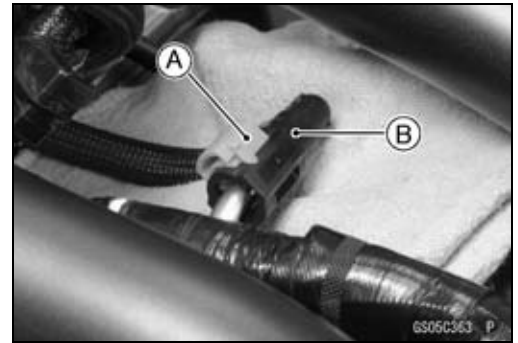
Fuel is flammable and explosive under certain conditions and can cause severe burns. Be prepared for fuel spillage; any spilled fuel must be completely wiped up immediately. When the fuel hose is disconnected, fuel spills out from the hose and the pipe because of residual pressure. Cover the hose connection with a piece of clean cloth to prevent fuel spillage.

- Draw the fuel out from the fuel tank with a commercially available electric pump.
 - Remove the fuel tank (see Fuel Tank Removal in the Fuel System (DFI) chapter).
 - Be careful of fuel spillage from the fuel tank since fuel still remains in the fuel tank and fuel pump. Plug the fuel pipe of the fuel tank.
 - Turn the fuel tank upside down.
 - Be sure to place a piece of cloth [A] around the fuel intake hose [B].
 - Remove:
 - Clamps [C]
 - Fuel Intake Hose
 - Be sure to place a piece of cloth around the fuel hose joint.
 - Wipe off the dirt of the surface [A] around the connection using a cloth or a soft brush.
-
- Push the joint lock claws [A] with your fingers.

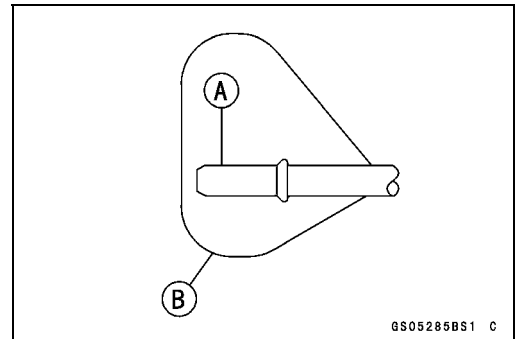


Periodic Maintenance Procedures

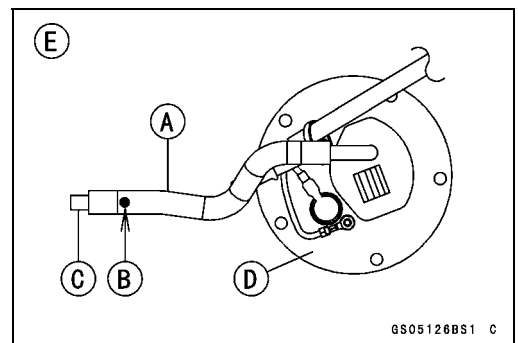
- Pull the joint lock [A] as shown.
- Pull the fuel outlet hose joint [B] out of the delivery pipe.



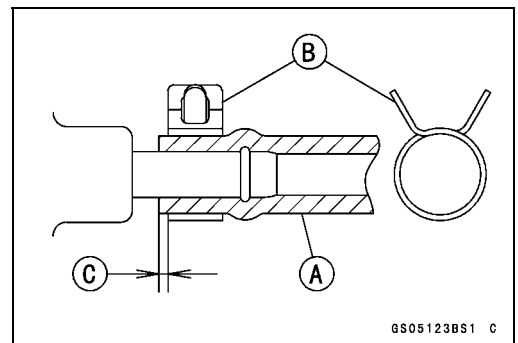
- Clean the delivery pipe [A].
- Cover the delivery pipe with the vinyl bag [B] to keep it clean.



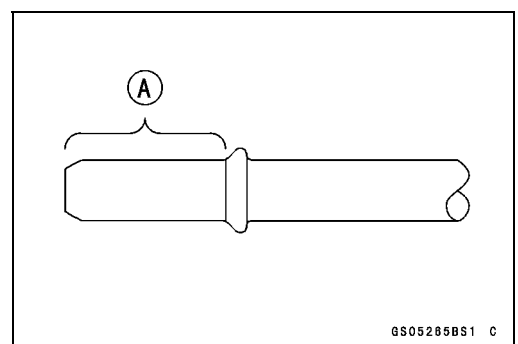
- Install a new fuel intake hose [A] so that the white mark side [B] faces outlet pipe [C] of the fuel tank.
Fuel Pump [D]
Bottom View [E]



- Fix the both ends of the fuel intake hose [A] with the clamps [B] as shown.
1 ~ 2 mm (0.039 ~ 0.079 in.) [C]



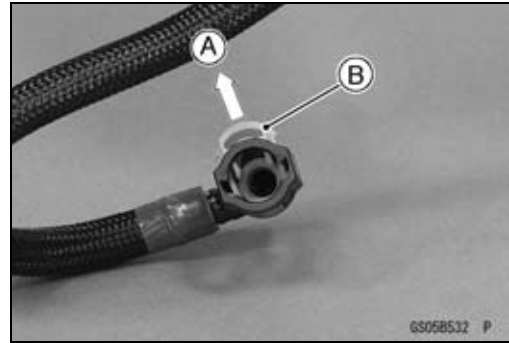
- Remove the vinyl bag on the pipe.
- Check that there are no flaws, burrs, and adhesion of foreign materials on the delivery pipe [A].



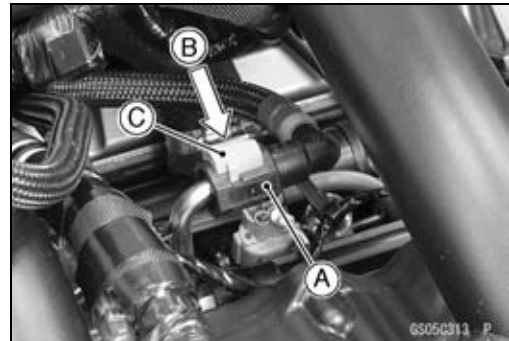
2-24 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

- Replace the fuel outlet hose with a new one.
- Pull [A] the joint lock [B] fully as shown.



- Insert the fuel outlet hose joint [A] straight onto the delivery pipe until the hose joint clicks.
- Push [B] the joint lock [C] until the hose joint clicks.

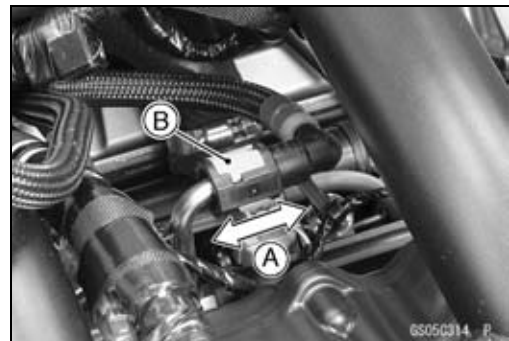


- Push and pull [A] the fuel hose joint [B] back and forth more than two times, and make sure it is locked and does not come off.

⚠ WARNING

Leaking fuel can cause a fire or explosion resulting in serious burns. Make sure the hose joint is installed correctly on the delivery pipe.

- ★ If it comes off, reinstall the hose joint.
- Run the fuel outlet hose correctly (see Cable, Wire, and Hose Routing section in the Appendix chapter).
- Install the fuel tank (see Fuel Tank Installation in the Fuel System (DFI) chapter).
- Start the engine and check the fuel hose for leaks.



Periodic Maintenance Procedures

Cooling System

Coolant Level Inspection

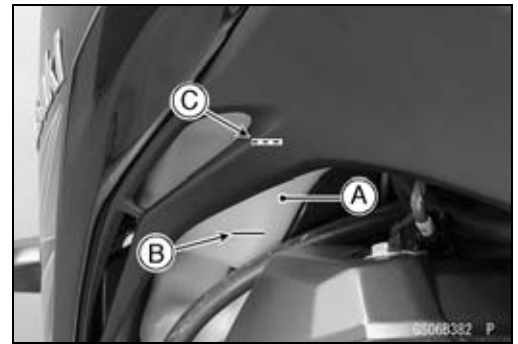
NOTE

○ Check the level when the engine is cold (room or ambient temperature).

- Check the coolant level in the reserve tank [A] with the motorcycle held perpendicular (Do not use the side stand.).
- ★ If the coolant level is lower than the “L” level line [B], unscrew the reserve tank cap and add coolant to the “F” level line [C].

“L”: Low

“F”: Full



NOTICE

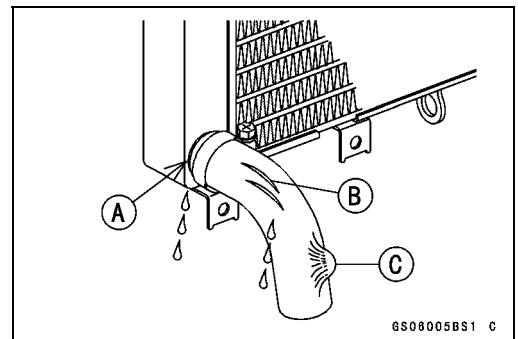
For refilling, add the specified mixture of coolant and soft water. Adding water alone dilutes the coolant and degrades its anticorrosion properties. The diluted coolant can attack the aluminum engine parts. In an emergency, soft water alone can be added. But the diluted coolant must be returned to the correct mixture ratio within a few days. If coolant must be added often or the reservoir tank has run completely dry, there is probably leakage in the cooling system. Check the system for leaks. Coolant ruins painted surfaces. Immediately wash away any coolant that spills on the frame, engine, wheels or other painted parts.

Cooling System

Water Hose and Pipe Inspection (coolant leak, damage, installation condition)

- The high pressure inside the water hose can cause coolant to leak [A] or the hose to burst if the line is not properly maintained.
- Visually inspect the hoses for signs of deterioration. Squeeze the hoses. A hose should not be hard and brittle, nor should it be soft or swollen.
- ★ Replace the hose if any fraying, cracks [B] or bulges [C] are noticed.
- Check that the hoses are securely connected and clamps are tightened correctly.

Torque - Water Hose Clamp Screws: 3.0 N·m (0.31 kgf·m, 27 in·lb)



Coolant Change

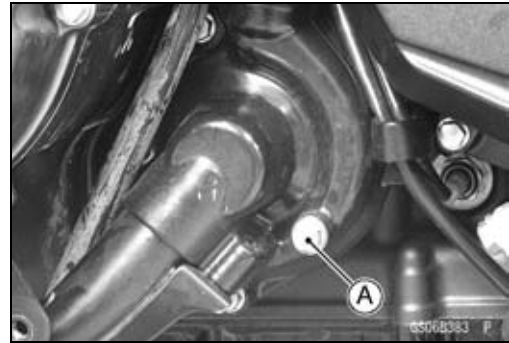
⚠ WARNING

Coolant can be extremely hot and cause severe burns, is toxic and very slippery. Do not remove the radiator cap or attempt to change the coolant when the engine is hot; allow it cool completely. Immediately wipe any spilled coolant from tires, frame, engine or other painted parts. Do not ingest coolant.

2-26 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

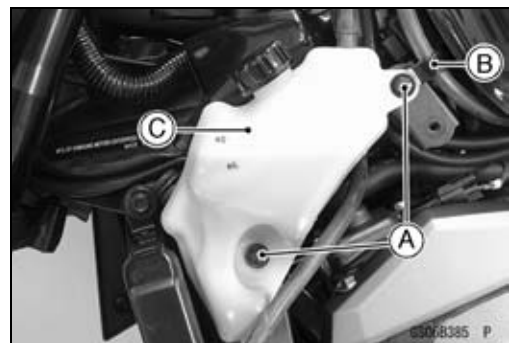
- Remove the left lower fairing (see Lower Fairing Removal (ZR800A/B Models) in the Frame chapter).
- Place a container under the coolant drain bolt [A], then remove the drain bolt.



- Remove the fuel tank (see Fuel Tank Removal in the Fuel System (DFI) chapter).
- Remove the radiator cap [A] in two steps. First turn the cap counterclockwise to the first stop. Then push and turn it further in the same direction and remove the cap.
- The coolant will drain from the radiator and engine.



- Remove:
 - Left Side Fairing (see Side Fairing Removal in the Frame chapter)
 - Reserve Tank Bolts [A]
 - Clamp [B]
- Turn over the reserve tank [C], remove the cap, and pour the coolant into a suitable container.
- Install the reserve tank.
- Tighten:
 - Torque - Reserve Tank Bolts: 9.8 N·m (1.0 kgf·m, 87 in·lb)**
- Tighten the drain bolt with the gasket.
- Replace the drain bolt gasket with a new one.
 - Torque - Coolant Drain Bolt (Water Pump): 11 N·m (1.1 kgf·m, 97 in·lb)**
- When filling the coolant, choose a suitable mixture ratio by referring to the coolant manufacturer's directions.



NOTICE

Soft or distilled water must be used with the antifreeze in the cooling system. If hard water is used in the system, it causes scales accumulation in the water passages, and considerably reduces the efficiency of the cooling system.

Water and Coolant Mixture Ratio (Recommended)

Soft Water:	50%
Coolant:	50%
Freezing Point:	-35°C (-31°F)
Total Amount:	2.8 L (3.0 US qt)

Periodic Maintenance Procedures

- Fill the radiator up to the filler neck [A] with coolant.

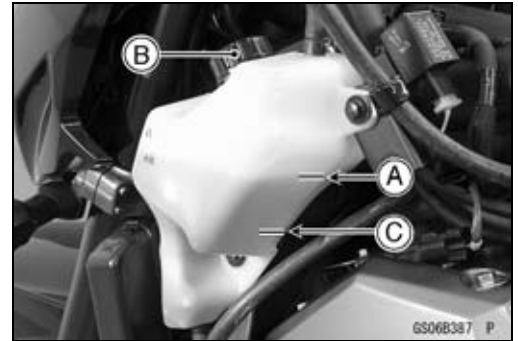
NOTE

○ Pour in the coolant slowly so that it can expel the air from the engine and radiator.

- Check the cooling system for leaks.
- Tap the water hoses to force any air bubbles caught inside.
- Fill the radiator up to the filler neck with coolant.



- Fill the reserve tank up to the “F” (full) level line [A] with coolant and install the cap [B].
- Install the fuel tank (see Fuel Tank Installation in the Fuel System (DFI) chapter).
- Start the engine, warm it up thoroughly until the radiator fan turns on and then stop the engine.
- Check the coolant level in the reserve tank after the engine cools down.
- ★ If the coolant level is lower than the “L” (low) level line [C], add coolant to the “F” level line.



NOTICE

Do not add more coolant above the “F” level line.

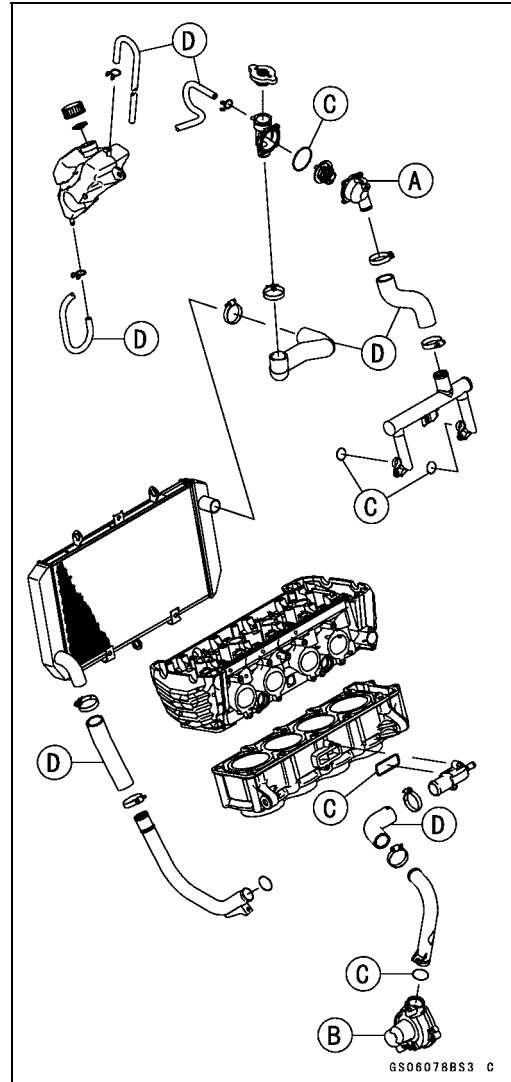
- Install the removed parts (see appropriate chapters).

2-28 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Water Hose and O-ring Replacement

- Drain the coolant (see Coolant Change).
- Remove:
 - Thermostat Housing [A] (see Thermostat Removal in the Cooling System chapter)
 - Water Pump Cover [B] (see Oil Pump Removal in the Engine Lubrication System chapter)
 - O-rings [C]
 - Hoses [D]
- Apply soap and water solution to the new O-rings and install them.
- Install the new hoses and tighten the clamps securely.
 - Torque - Water Hose Clamp Screws: 3.0 N·m (0.31 kgf·m, 27 in·lb)**
- Fill the coolant (see Coolant Change).
- Check the cooling system for leaks.



Engine Top End

Valve Clearance Inspection

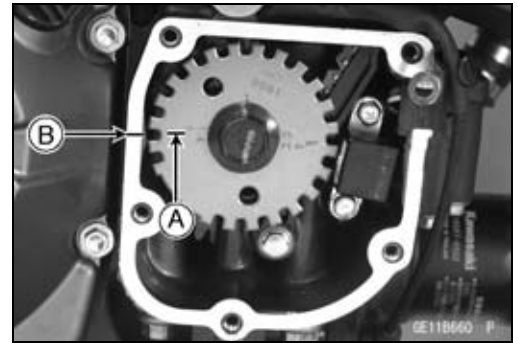
NOTE

○ Valve clearance must be checked and adjusted when the engine is cold (room temperature).

- Remove:
 - Crankshaft Sensor Cover (see Crankshaft Sensor Removal in the Electrical System chapter)
 - Cylinder Head Cover (see Cylinder Head Cover Removal in the Engine Top End chapter)

Periodic Maintenance Procedures

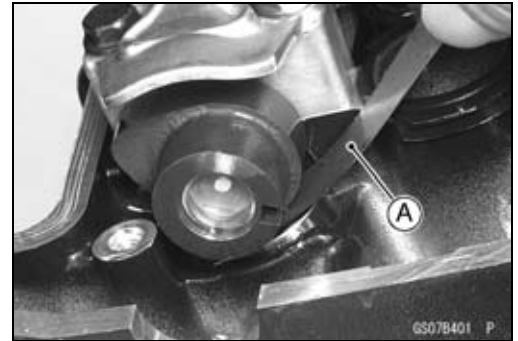
- Position the crankshaft at 1,4 piston TDC.
TDC Mark [A] for #1, 4 Pistons
Timing Mark [B] (Crankcase Halves Mating Surface)



- Using the thickness gauge [A], measure the valve clearance between the cam and the valve lifter.

Valve Clearance Standard:

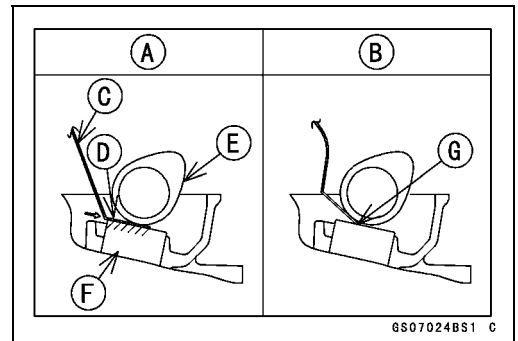
Exhaust	0.22 ~ 0.31 mm (0.0087 ~ 0.0122 in.)
Intake	0.15 ~ 0.24 mm (0.0059 ~ 0.0094 in.)



NOTE

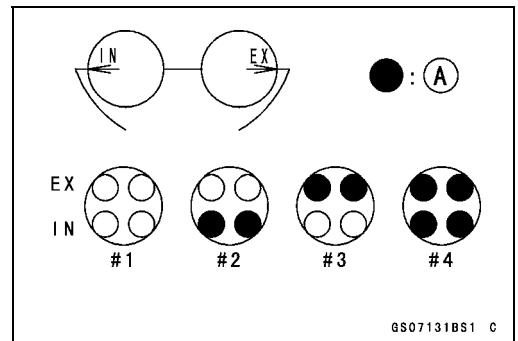
○ Thickness gauge is horizontally inserted on the valve lifter.

- Appropriateness [A]
- Inadequacy [B]
- Thickness Gauge [C]
- Horizontally Inserts [D]
- Cam [E]
- Valve Lifter [F]
- Hits the Valve Lifter Ahead [G]



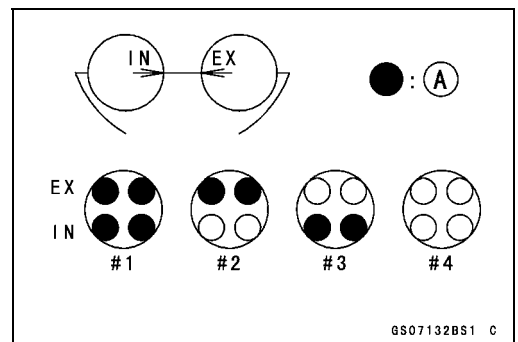
- When positioning #4 piston TDC at the end of the compression stroke:

Intake Valve Clearance of #2 and #4 Cylinders
Exhaust Valve Clearance of #3 and #4 Cylinders
Measuring Valve [A]



- When positioning #1 piston TDC at the end of the compression stroke:

Intake Valve Clearance of #1 and #3 Cylinders
Exhaust Valve Clearance of #1 and #2 Cylinders
Measuring Valve [A]



★ If the valve clearance is not within the specified range, first record the clearance, and then adjust it.

2-30 PERIODIC MAINTENANCE

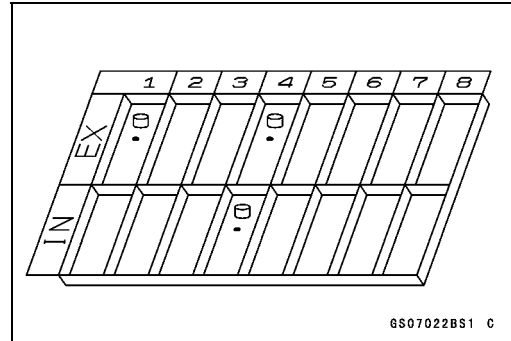
Periodic Maintenance Procedures

Valve Clearance Adjustment

- To change the valve clearance, remove the camshaft chain tensioner, camshafts and valve lifters. Replace the shim with one of a different thickness.

NOTE

- Mark and record the locations of the valve lifters and shims so that they can be reinstalled in their original positions.



- Besides the standard shims in the valve clearance adjustment charts, the following additional shims may be used.

Adjustment Shims

Part Number	Thickness
92180-0276	3.225 mm
92180-0277	3.275 mm
92180-0278	3.325 mm

- Clean the shim to remove any dust or oil.
- Measure the thickness of the removed shim [A].



Periodic Maintenance Procedures

VALVE CLEARANCE ADJUSTMENT CHART INTAKE VALVE

		PRESENT SHIM																				Example			
PART No. (92180-)		1014	1016	1018	1020	1022	1024	1026	1028	1030	1032	1034	1036	1038	1040	1042	1044	1046	1048	1050	1052	1054			
MARK		50	55	60	65	70	75	80	85	90	95	00	05	10	15	20	25	30	35	40	45	50			
THICKNESS (mm)		2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50			
VALVE CLEARANCE MEASUREMENT	Example	0.00~0.02	-	-	-	-	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30		
	0.03~0.07	-	-	-	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40		
	0.08~0.12	-	-	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45		
	0.13~0.14	-	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50		
	0.15~0.24	SPECIFIED CLEARANCE/NO CHANGE REQUIRED																							
	0.25~0.27	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50				
	0.28~0.32	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50					
	0.33~0.37	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50						
	0.38~0.42	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50							
	0.43~0.47	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50								
	0.48~0.52	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50									
	0.53~0.57	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50										
	0.58~0.62	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50											
	0.63~0.67	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50												
	0.68~0.72	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50													
	0.73~0.77	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50														
	0.78~0.82	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50															
	0.83~0.87	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50																
	0.88~0.92	3.20	3.25	3.30	3.35	3.40	3.45	3.50																	
	0.93~0.97	3.25	3.30	3.35	3.40	3.45	3.50																		
0.98~1.02	3.30	3.35	3.40	3.45	3.50																				
1.03~1.07	3.35	3.40	3.45	3.50																					
1.08~1.12	3.40	3.45	3.50																						
1.13~1.17	3.45	3.50																							
1.18~1.22	3.50																								

INSTALL THE SHIM OF THIS THICKNESS (mm)

6S07122B*3 C

1. Measure the clearance (when engine is cold).
2. Check present shim size.
3. Match clearance in vertical column with present shim size in horizontal column.
4. Install the shim specified where the lines intersect. This shim will give the proper clearance.

Example: Present shim is **2.95 mm**
 Measured clearance is **0.45 mm**
 Replace **2.95 mm** shim with **3.20 mm** shim.

5. Remeasure the valve clearance and readjust if necessary.

2-32 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

VALVE CLEARANCE ADJUSTMENT CHART EXHAUST VALVE

		PRESENT SHIM																				
		Example																				
PART No. (92180-)		1014	1016	1018	1020	1022	1024	1026	1028	1030	1032	1034	1036	1038	1040	1042	1044	1046	1048	1050	1052	1054
MARK		50	55	60	65	70	75	80	85	90	95	00	05	10	15	20	25	30	35	40	45	50
THICKNESS (mm)		2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50
VALVE CLEARANCE MEASUREMENT	0.00~0.04	-	-	-	-	-	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25
	0.05~0.09	-	-	-	-	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30
	0.10~0.14	-	-	-	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35
	0.15~0.19	-	-	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40
	0.20~0.21	-	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45
	0.22~0.31	SPECIFIED CLEARANCE/NO CHANGE REQUIRED																				
	0.32~0.34	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	
	0.35~0.39	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50		
	0.40~0.44	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50			
	0.45~0.49	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50				
	0.50~0.54	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50					
	0.55~0.59	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50						
	0.60~0.64	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50							
	0.65~0.69	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50								
	0.70~0.74	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50									
	0.75~0.79	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50										
	0.80~0.84	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50											
	0.85~0.89	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50												
	0.90~0.94	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50													
	0.95~0.99	3.20	3.25	3.30	3.35	3.40	3.45	3.50														
	1.00~1.04	3.25	3.30	3.35	3.40	3.45	3.50															
	1.05~1.09	3.30	3.35	3.40	3.45	3.50																
	1.10~1.14	3.35	3.40	3.45	3.50																	
	1.15~1.19	3.40	3.45	3.50																		
	1.20~1.24	3.45	3.50																			
1.25~1.29	3.50																					

INSTALL THE SHIM OF THIS THICKNESS (mm)

6S07120B/3 C

1. Measure the clearance (when engine is cold).
2. Check present shim size.
3. Match clearance in vertical column with present shim size in horizontal column.
4. Install the shim specified where the lines intersect. This shim will give the proper clearance.

Example: Present shim is **2.95 mm**.
 Measured clearance is **0.47 mm**.
 Replace **2.95 mm** shim with **3.15 mm** shim.

5. Remeasure the valve clearance and readjust if necessary.

Periodic Maintenance Procedures

NOTICE

Be sure to remeasure the clearance after selecting a shim according to the table. If the clearance is out of the specified range, use the additional shim.

- If there is no valve clearance, use a shim that is a few sizes smaller, and remeasure the valve clearance.
- When installing the shim, face the marked side toward the valve lifter. At this time, apply engine oil to the shim or the valve lifter to keep the shim in place during camshaft installation.

NOTICE

Do not put shim stock under the shim. This may cause the shim to pop out at high rpm, causing extensive engine damage.
Do not grind the shim. This may cause it to fracture, causing extensive engine damage.

- Apply engine oil to the valve lifter surface and install the lifter.
- Install the camshaft (see Camshaft Installation in the Engine Top End chapter).
- Recheck the valve clearance and readjust if necessary.
- Install the removed parts (see appropriate chapters).

Air Suction System Damage Inspection

- Remove the left middle fairing (see Middle Fairing Removal in the Frame chapter).
- Disconnect the air switching valve hose [A] out of the air cleaner housing.
- Start the engine and run it at idle speed.
- Plug the air switching valve hose end with your finger and feel vacuum pulsing in the hose.
- ★ If there is no vacuum pulsation, check the hose line for leak. If there is no leak, check the air switching valve (see Air Switching Valve Unit Test in the Electrical System chapter) or air suction valve (see Air Suction Valve Inspection in the Engine Top End chapter).



Clutch

Clutch Operation Inspection

- Pull the clutch lever just enough to take up the free play [A].
- Measure the gap between the lever and the lever holder.
- ★ If the gap is too wide, the clutch may not release fully. If the gap is too narrow, the clutch may not engage fully. In either case, adjust it.

Clutch Lever Free Play

Standard: 2 ~ 3 mm (0.08 ~ 0.12 in.)



2-34 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

⚠ WARNING

The engine and exhaust system get extremely hot during normal operation and can cause serious burns. Never touch the engine or exhaust pipe during clutch adjustment.

- Turn the adjuster [A] so that 5 ~ 6 mm (0.20 ~ 0.24 in.) [B] of threads are visible.
- Remove the right subframe cover (see Subframe Cover Removal in the Frame chapter).
- Slide the dust cover [A] at the clutch cable lower end out of place.
- Loosen both adjusting nuts [B] at the clutch cover as far as they will go.
- Pull the clutch outer cable [C] tight and tighten the adjusting nuts against the clutch cover [D].
- Slip the dust cover back onto place.
- Turn the adjuster at the clutch lever until the free play is correct.
- Push the release lever [A] toward the front of the motorcycle until it becomes hard to turn.
- At this time, the release lever should have the proper angle shown.
60° [B]
- ★ If the angle is wrong, check the clutch and release parts for wear.

⚠ WARNING

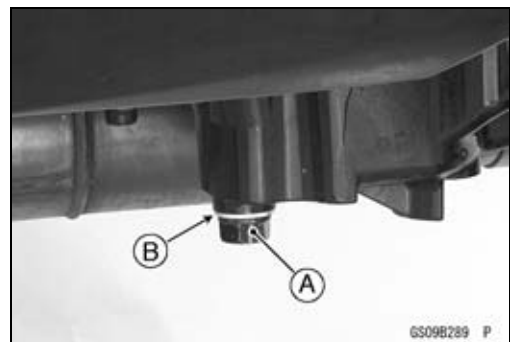
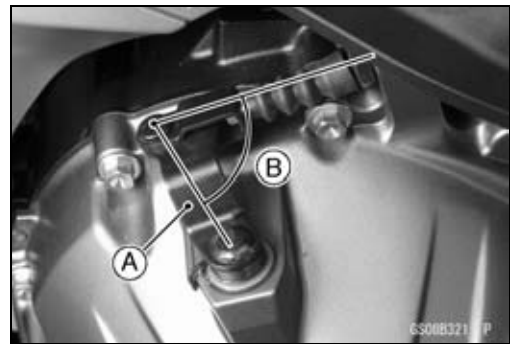
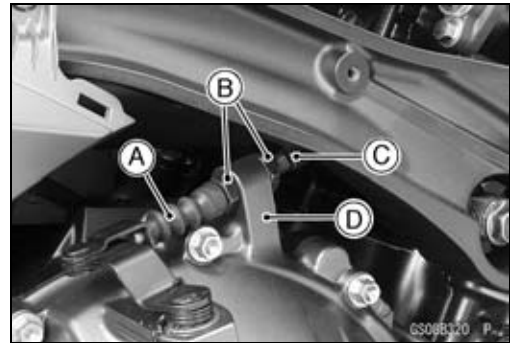
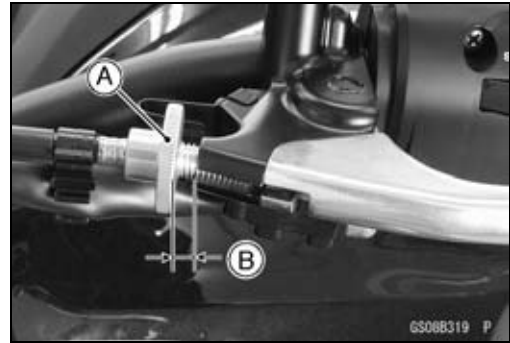
Too much cable play can prevent clutch disengagement and cause an accident resulting in serious injury or death. When adjusting the clutch or replacing the cable, be sure the upper end of the clutch outer cable is fully seated in its fitting, or it could slip into place later, creating enough cable play to prevent clutch disengagement.

- After the adjustment, start the engine and check that the clutch does not slip and that it releases properly.

Engine Lubrication System

Engine Oil Change

- Situate the motorcycle so that it is vertical after warming up the engine.
- Remove the engine oil drain bolt [A] to drain the oil.
- The oil in the oil filter can be drained by removing the filter (see Oil Filter Replacement).
- Replace the drain bolt gasket [B] with a new one.
- Tighten the drain bolt.
- Torque - Engine Oil Drain Bolt: 30 N·m (3.1 kgf·m, 22 ft·lb)
- Pour in the specified type and amount of oil.



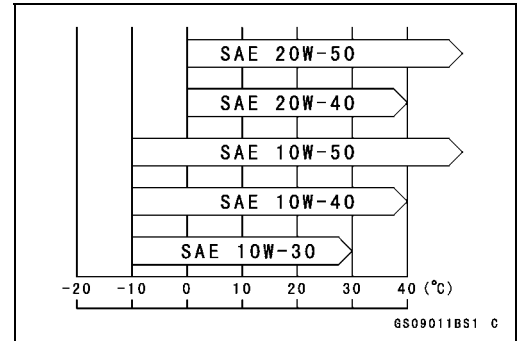
Periodic Maintenance Procedures

Recommended Engine Oil

Type: API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2

Viscosity: SAE 10W-40

Capacity: 3.1 L (3.3 US qt) (when filter is not removed)
 3.4 L (3.6 US qt) (when filter is removed)
 3.8 L (4.0 US qt) (when engine is completely dry)



NOTE

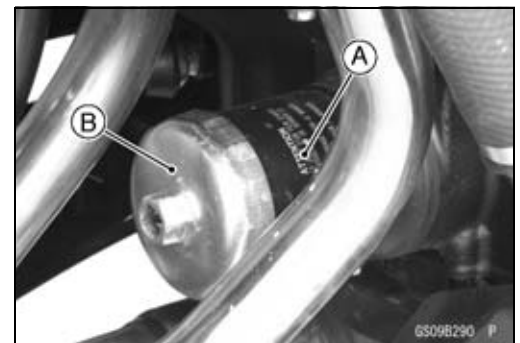
- Do not add any chemical additive to the oil. Oils fulfilling the above requirements are fully formulated and provide adequate lubrication for both the engine and the clutch.
- Although 10W-40 engine oil is the recommended oil for most conditions, the oil viscosity may need to be changed to accommodate atmospheric conditions in your riding area.

- Check the oil level (see Oil Level Inspection in the Engine Lubrication System chapter).

Oil Filter Replacement

- Drain the engine oil (see Engine Oil Change).
- Remove the oil filter [A] with the oil filter wrench [B].

Special Tool - Oil Filter Wrench: 57001-1249



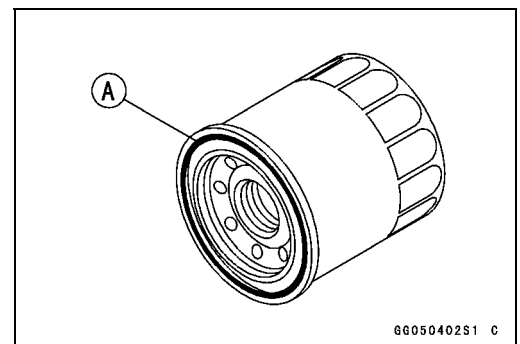
- Replace the filter with a new one.
- Apply grease to the gasket [A] before installation.
- Tighten the filter with the oil filter wrench.

Torque - Oil Filter: 17 N·m (1.7 kgf·m, 13 ft·lb)

NOTE

- Hand tightening of the oil filter can not be allowed since it does not reach to this tightening torque.

- Pour in the specified type and amount of oil (see Engine Oil Change).



2-36 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

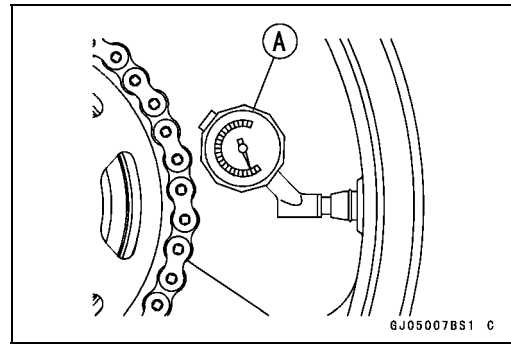
Wheels/Tires

Air Pressure Inspection

- Remove the air valve cap.
- Measure the tire air pressure with an air pressure gauge [A] when the tires are cold (that is, when the motorcycle has not been ridden more than a mile during the past 3 hours).
- Install the air valve cap.
- ★ Adjust the tire air pressure according to the specifications if necessary.

Air Pressure (when Cold)

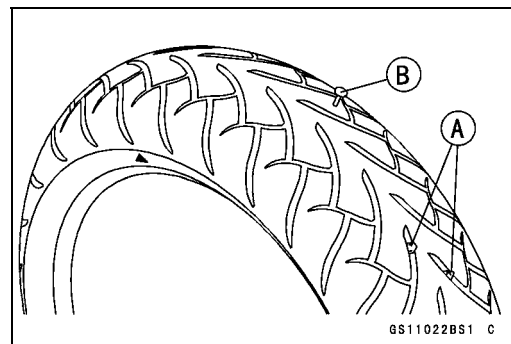
- Front:** Up to 180 kg (397 lb)
250 kPa (2.50 kgf/cm², 36 psi)
- Rear:** Up to 180 kg (397 lb)
290 kPa (2.90 kgf/cm², 42 psi)



Wheels and Tires

Wheel/Tire Damage Inspection

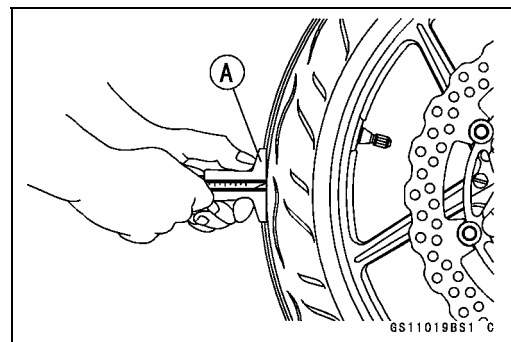
- Remove any imbedded stones [A] or other foreign particles [B] from tread.
- Visually inspect the tire for cracks and cuts, and replace the tire if necessary. Swelling or high spots indicate internal damage, requiring tire replacement.
- Visually inspect the wheel for cracks, cuts and dents damage.
- ★ If any damage is found, replace the wheel if necessary.



Tire Tread Wear Inspection

As the tire tread wears down, the tire becomes more susceptible to puncture and failure. An accepted estimate is that 90% of all tire failures occur during the last 10% of tread life (90% worn). So it is false economy and unsafe to use the tires until they are bald.

- Measure the tread depth at the center of the tread with a depth gauge [A]. Since the tire may wear unevenly, take measurement at several places.
- ★ If any measurement is less than the service limit, replace the tire (see Tire Removal/Installation in the Wheels/Tires chapter).



Periodic Maintenance Procedures

Tread Depth

Standard:

Front 4.0 mm (0.16 in.)

Rear 5.5 mm (0.22 in.)

Service Limit:

Front 1 mm (0.04 in.)

(AT, CH, DE) 1.6 mm (0.06 in.)

Rear Up to 130 km/h (80 mph): 2 mm (0.08 in.)

Over 130 km/h (80 mph): 3 mm (0.12 in.)

⚠ WARNING

Some replacement tires may adversely affect handling and cause an accident resulting in serious injury or death. To ensure proper handling and stability, use only the recommended standard tires for replacement, inflated to the standard pressure.

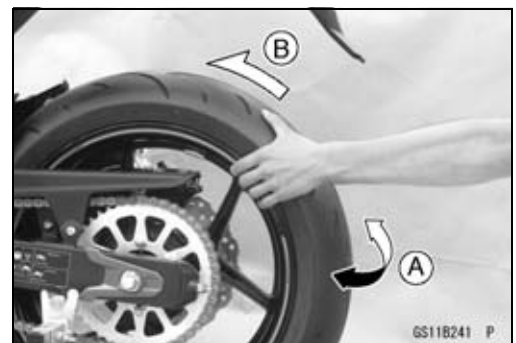
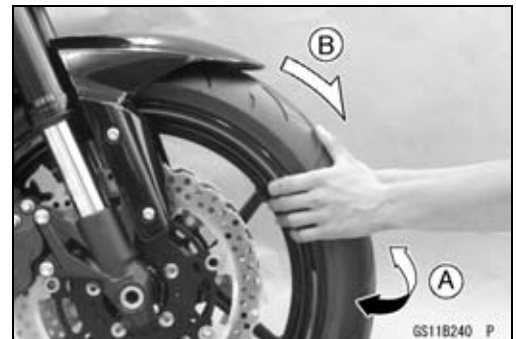
NOTE

○Most countries may have their own regulations a minimum tire tread depth: be sure to follow them.

○Check and balance the wheel when a tire is replaced with a new one.

Wheel Bearing Damage Inspection

- Raise the front wheel off the ground with the jack (see Front Wheel Removal in the Wheels/Tires chapter).
 - Turn the handlebars all the way to the right or left.
 - Inspect the roughness of the front wheel bearing by pushing and pulling [A] the wheel.
 - Spin [B] the front wheel lightly, and check for smoothly turn, roughness, binding or noise.
 - ★ If roughness, binding or noise is found, remove the front wheel and inspect the wheel bearing (see Front Wheel Removal, Hub Bearing Inspection in the Wheels/Tires chapter).
-
- Raise the rear wheel off the ground with the stand (see Rear Wheel Removal in the Wheels/Tires chapter).
 - Inspect the roughness of the rear wheel bearing by pushing and pulling [A] the wheel.
 - Spin [B] the rear wheel lightly, and check for smoothly turn, roughness, binding or noise.
 - ★ If roughness, binding or noise is found, remove the rear wheel and inspect the wheel bearing (see Rear Wheel Removal, Hub Bearing Inspection in the Wheels/Tires chapter) and coupling (see Coupling Bearing Inspection in the Final Drive chapter).



2-38 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Final Drive

Drive Chain Lubrication Condition Inspection

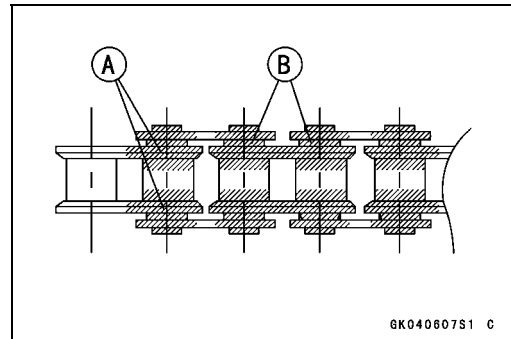
- If a special lubricant is not available, a heavy oil such as SAE 90 is preferred to a lighter oil because it will stay on the chain longer and provide better lubrication.
- If the chain appears especially dirty, clean it before lubrication.

NOTICE

The O-rings between the side plates seal in the lubricant between the pin and the bushing. To avoid damaging the O-rings and resultant loss of lubricant, observe the following rules.

Use only kerosene or diesel oil for cleaning of the O-ring of the drive chain. Any other cleaning solution such as gasoline or trichloroethylene will cause deterioration and swelling of the O-ring. Immediately blow the chain dry with compressed air after cleaning. Complete cleaning and drying the chain within 10 minutes.

- Apply oil to the sides of the rollers so that oil will penetrate to the rollers and bushings. Apply the oil to the O-rings so that the O-rings will be coated with oil.
- Wipe off any excess oil.
 - Oil Applied Areas [A]
 - O-rings [B]



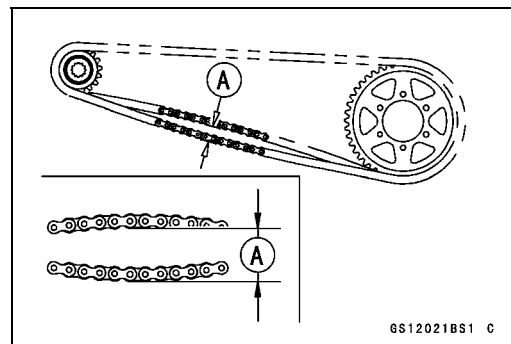
Drive Chain Slack Inspection

NOTE

- Check the slack with the motorcycle setting on its side stand.
- Clean the chain if it is dirty, and lubricate it if it appears dry.
- Check the wheel alignment (see Wheel Alignment Inspection).
- Rotate the rear wheel to find the position where the chain is tightest.
- Measure the vertical movement (chain slack) [A] midway between the sprockets.
- ★ If the chain slack exceeds the standard, adjust it.

Chain Slack

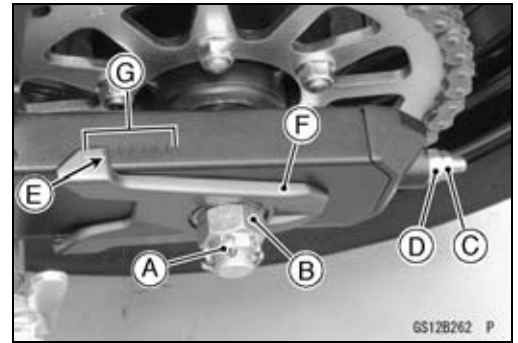
Standard: 20 ~ 30 mm (0.8 ~ 1.2 in.)



Periodic Maintenance Procedures

Drive Chain Slack Adjustment

- Remove the cotter pin [A], and loosen the axle nut [B].
- Loosen the both chain adjuster locknuts [C].
- ★ If the chain is too loose, turn in the left and right chain adjusters [D] evenly.
- ★ If the chain is too tight, turn out the left and right chain adjusters evenly, and kick the wheel forward.
- Turn both chain adjusters evenly until the drive chain has the correct amount of slack. To keep the chain and wheel properly aligned, the notch [E] on the left wheel alignment indicator [F] should align with the same swingarm mark or position [G] that the right indicator notch aligns with.



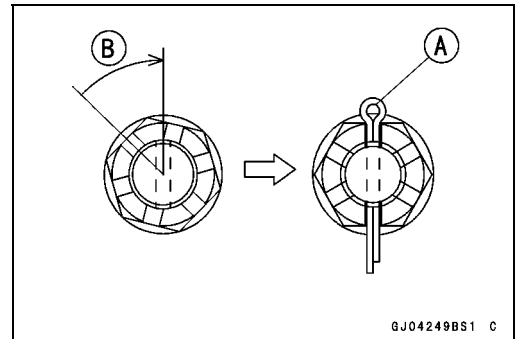
⚠ WARNING

Misalignment of the wheel will result in abnormal wear and may result in an unsafe riding condition. Be sure the wheel is properly aligned.

- Tighten:
 - Torque - Chain Adjuster Locknuts: 16.5 N·m (1.68 kgf·m, 12.2 ft·lb)
 - Rear Axle Nut: 108 N·m (11.0 kgf·m, 79.7 ft·lb)
- Turn the wheel, measure the chain slack again at the tightest position, and readjust if necessary.
- Insert a new cotter pin [A].

NOTE

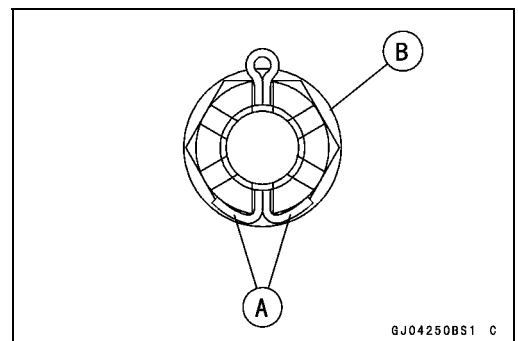
- When inserting the cotter pin, if the slots in the nut do not align with the cotter pin hole in the axle, tighten the nut clockwise [B] up to next alignment.
- It should be within 30 degrees.
- Loosen once and tighten again when the slot goes past the nearest hole.



- Bend the cotter pin [A] over the nut [B].

⚠ WARNING

A loose axle nut can lead to an accident resulting in serious injury or death. Tighten the axle nut to the proper torque and install a new cotter pin.





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